



STIC Search Report

EIC 1700

STIC Database Tracking Number: 10/724062

TO: Camie Thompson
Location: 10D28
Art Unit : 1774
March 24, 2005

Case Serial Number: 10/724062

From: Les Henderson
Location: EIC 1700
REM 4B28 / 4A30
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Search Notes

JP 2001 - 303 64M



STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact **the EIC searcher or contact:**

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

- I am an examiner in Workgroup: Example: 1713
- Relevant prior art found, search results used as follows:
- 102 rejection
 - 103 rejection
 - Cited as being of interest.
 - Helped examiner better understand the invention.
 - Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- Foreign Patent(s)
- Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art not found:

- Results verified the lack of relevant prior art (helped determine patentability).
- Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28



SEARCH REQUEST FORM**Scientific and Technical Information Center**Requester's Full Name: Carrie ThompsonExaminer #: 79244 Date: 3/13/05Art Unit: 174 Phone Number 301530Serial Number: 10724,062Mail Box and Bldg/Room Location: 10038 Results Format Preferred (circle): PAPER DISK E-MAILRemain**If more than one search is submitted, please prioritize searches in order of need.**

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched.

Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc., if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Phosphor of warm luminescent colors + fluorescent displayInventors (please provide full names): Takuya Hamada; Takao Sugiura, Hirokazu
Takanashi; Atsushi TokuEarliest Priority Filing Date: 12/26/02

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

*Please do a search on Claims 1-14**Thanks***STAFF USE ONLY**

Searcher: _____

Searcher Phone #: _____

Searcher Location: _____

Date Searcher Picked Up: _____

Date Completed: _____

Searcher Prep & Review Time: 30Clerical Prep Time: 30Online Time: 240**Type of Search**

NA Sequence (#) _____

Vendors and cost where applicableSTN \$ + 0.61.2 1,332.79

AA Sequence (#) _____

Dialog 1,800

Structure (#) _____

Questel/Orbit _____

Bibliographic ✓

Dr.Link _____

Litigation _____

Lexis/Nexis _____

Fulltext _____

Sequence Systems _____

Patent Family _____

WWW/Internet _____

Other _____

Other (specify) _____

What is claimed is:

1. A mixture phosphor comprising:

a phosphor of a red luminous color devoid of Cd; and
5 a phosphor of a green family luminous color devoid of
Cd,

wherein a luminous color of the mixture phosphor is
one of warm colors ranging from greenish yellow, yellow,
yellowish orange, orange and reddish orange and red.

10

2. The mixture phosphor of claim 1, wherein the phosphor
of the red luminous color is a SrTiO₃-based phosphor.

L4

- 15 3. The mixture phosphor of claim 1, wherein the phosphor
of the red luminous color is SrTiO₃:Pr.

L4 L7

4. The mixture phosphor of claim 1, wherein the phosphor
of the red luminous color is SrTiO₃:Pr,Al. (Ba,Sr)LaTiO₄

L4 L7 L9

- 20 5. The mixture phosphor of claim 1, wherein the phosphor
of the green family luminous color is ZnS:Cu,Al phosphor or
L10 - ZnS:Au,Al phosphor, and a mixing ratio of the phosphor of
the green family luminous color is about 5 to about 70wt% of
the mixture phosphor.

25

6. The mixture phosphor of claim 1, wherein the phosphor

L10 L^b
1 /

of the green family luminous color is ZnS:Cu phosphor or
L10 - ZnS:Cu,Au,Al phosphor, and a mixing ratio of the phosphor of
the green family luminous color is about 5 to about 50wt% of
the mixture phosphor.

5

7. The mixture phosphor of claim 1, wherein the phosphor
of the green family luminous color is ZnGa₂O₄:Mn phosphor,
and a mixing ratio of the phosphor of the green family
luminous color is about 5 to about 50wt% of the mixture
10 phosphor.

8. A fluorescent display device comprising:
a vacuum envelope including:
an anode electrode formed by pasting the phosphor of
15 claim 1 on an anode conductor; and
an electron source, for radiating electrons, arranged
in a vacuum envelope.

9. A fluorescent display device comprising:
20 a vacuum envelope including:
an anode electrode formed by pasting the phosphor of
claim 2 on an anode conductor; and
an electron source, for radiating electrons, arranged
in a vacuum envelope.

25

10. A fluorescent display device comprising:

a vacuum envelope including:
an anode electrode formed by pasting the phosphor of
claim 3 on an anode conductor; and
an electron source, for radiating electrons, arranged
5 in a vacuum envelope.

11. A fluorescent display device comprising:
a vacuum envelope including:
an anode electrode formed by pasting the phosphor of
10 claim 4 on an anode conductor; and
an electron source, for radiating electrons, arranged
in a vacuum envelope.

12. A fluorescent display device comprising:
15 a vacuum envelope including:
an anode electrode formed by pasting the phosphor of
claim 5 on an anode conductor; and
an electron source, for radiating electrons, arranged in a
vacuum envelope.

20
13. A fluorescent display device comprising:
a vacuum envelope including:
an anode electrode formed by pasting the phosphor of
claim 6 on an anode conductor; and
25 an electron source, for radiating electrons, arranged in a
vacuum envelope.

14. A fluorescent display device comprising:
a vacuum envelope including:
an anode electrode formed by pasting the phosphor of
claim 7 on an anode conductor; and
5 an electron source, for radiating electrons, arranged in a
vacuum envelope.

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(FILE 'HOME' ENTERED AT 10:30:11 ON 24 MAR 2005)

FILE 'HCA' ENTERED AT 10:30:31 ON 24 MAR 2005

E US20040113131/PN

L1 1 SEA ABB=ON PLU=ON US20040113131/PN
 D SCAN
 D ALL
 SEL L1 RN

FILE 'REGISTRY' ENTERED AT 10:31:45 ON 24 MAR 2005

L2 9 SEA ABB=ON PLU=ON (12060-59-2/BI OR 12064-18-5/BI OR
 12442-27-2/BI OR 1314-98-3/BI OR 7429-90-5/BI OR
 7439-96-5/BI OR 7440-10-0/BI OR 7440-50-8/BI OR 7440-57-5
 /BI)
 E 12064-18-5/RN

L3 1 SEA ABB=ON PLU=ON 12064-18-5/RN
 D SCAN
 E 12060-59-2/RN

L4 1 SEA ABB=ON PLU=ON 12060-59-2/RN
 D SCAN
 E 7440-57-5/RN

L5 1 SEA ABB=ON PLU=ON 7440-57-5/RN
 D SCAN
 E 7440-50-8/RN

L6 1 SEA ABB=ON PLU=ON 7440-50-8/RN
 D SCAN
 E 7440-10-0/RN

L7 1 SEA ABB=ON PLU=ON 7440-10-0/RN
 D SCAN
 E 7439-96-5/RN

L8 1 SEA ABB=ON PLU=ON 7439-96-5/RN
 D SCAN
 E 7429-90-5/RN

L9 1 SEA ABB=ON PLU=ON 7429-90-5/RN
 D SCAN
 E 1314-98-3/RN

L10 1 SEA ABB=ON PLU=ON 1314-98-3/RN
 D SCAN

L11 9 SEA ABB=ON PLU=ON (SR(L)TI(L)O(L)PR)/ELS(L)4/ELC.SUB
 L12 0 SEA ABB=ON PLU=ON (SR(L)TI(L)O(L)PR(L)AL)/ELS(L)5/ELC.S
 UB

L13 38 SEA ABB=ON PLU=ON (SR(L)TI(L)O(L)AL)/ELS(L)4/ELC.SUB
 L14 4 SEA ABB=ON PLU=ON (ZN(L)S(L)CU(L)AL)/ELS(L)4/ELC.SUB

L15 0 SEA ABB=ON PLU=ON (ZN(L)S(L)AU(L)AL)/ELS(L)4/ELC.SUB
 L16 19 SEA ABB=ON PLU=ON (ZN(L)S(L)CU)/ELS(L)3/ELC.SUB

L17 3 SEA ABB=ON PLU=ON (ZN(L)S(L)AL)/ELS(L)3/ELC.SUB
 L18 0 SEA ABB=ON PLU=ON (ZN(L)S(L)AU)/ELS(L)3/ELC.SUB

L19 0 SEA ABB=ON PLU=ON (ZN(L)S(L)CU(L)AL(L)AU)/ELS(L)5/ELC.S
 UB

L20 11 SEA ABB=ON PLU=ON (ZN(L)GA(L)O(L)MN)/ELS(L)4/ELC.SUB

FILE 'HCA' ENTERED AT 11:00:32 ON 24 MAR 2005

L21 403 SEA ABB=ON PLU=ON L3
L22 608 SEA ABB=ON PLU=ON GALLIUM(W)ZINC(W)OXIDE OR GA2ZNO4OR
 ZINC(W)GALLIUM(W)OXIDE OR ZNGA2O4
L23 14136 SEA ABB=ON PLU=ON L4
L24 19908 SEA ABB=ON PLU=ON STRONTIUM#(A)TITANATE# OR SRTIO3
L25 147195 SEA ABB=ON PLU=ON L5
L26 251391 SEA ABB=ON PLU=ON GOLD OR AU
L27 480212 SEA ABB=ON PLU=ON L6
L28 1098393 SEA ABB=ON PLU=ON CU OR COPPER
L29 19596 SEA ABB=ON PLU=ON L7
L30 167708 SEA ABB=ON PLU=ON PRASEODYMIUM OR PR
L31 171501 SEA ABB=ON PLU=ON L8
L32 546903 SEA ABB=ON PLU=ON MANGANESE OR MN
L33 354400 SEA ABB=ON PLU=ON L9
L34 1324892 SEA ABB=ON PLU=ON AL OR ALUMINUM OR ALUMINIUM
L35 25460 SEA ABB=ON PLU=ON L10
L36 35413 SEA ABB=ON PLU=ON ZINC(A) (SULFIDE OR MONOSULFIDE) OR
 ZNS
L37 9 SEA ABB=ON PLU=ON L11
 D SCAN
L38 18 SEA ABB=ON PLU=ON PRASEODYMIUM (2A) STRONTIUM (2A) TITANIUM
 (2A) OXIDE OR (PR(2A)SR(2A)TI(2A)O)
L39 24 SEA ABB=ON PLU=ON L13
L40 96 SEA ABB=ON PLU=ON ALUMINUM (3A) STRONTIUM (3A) TITANIUM (3A)
 OXIDE OR (AL(3A)SR(3A)TI(3A)O)
L41 3 SEA ABB=ON PLU=ON L14
 D SCAN
L42 386 SEA ABB=ON PLU=ON ALUMINUM (3A) COPPER (3A) ZINC (3A) SULFIDE
 OR (AL(3A)CU(3A)ZN(3A)S)
L43 40 SEA ABB=ON PLU=ON L16
L44 5447 SEA ABB=ON PLU=ON COPPER (3A) ZINC (3A) SULFIDE OR
 (CU(3A)ZN(3A)S)
L45 59 SEA ABB=ON PLU=ON L17
L46 1107 SEA ABB=ON PLU=ON ALUMINUM (3A) ZINC (3A) SULFIDE OR
 AL2ZNS4 OR (AL(3A)ZN(3A)S) OR ZNAL2S4
L47 17 SEA ABB=ON PLU=ON L20
L48 97 SEA ABB=ON PLU=ON GALLIUM (3A) MANGANESE (3A) ZINC (3A) OXIDE
 OR (GA(3A)MN(3A)ZN(3A)O)
L49 882677 SEA ABB=ON PLU=ON (EL OR E(W)L OR LED OR L(W)E(W)D OR
 OLED ELECTROLUM!N? OR ORGANOLUM!N? OR (ELECTRO OR ORGANO
 OR ORG#) (2A)LUM!N? OR LIGHT?(2A)(EMIT? OR EMISSION? OR
 SOURCE?) OR LUMINES##### OR FLUORES? OR PHOSPHORES?) /BI
 ,AB OR LED/IT OR PHOSPHOR# OR LUMIN?
L50 132749 SEA ABB=ON PLU=ON L49 AND ((L21 OR L22 OR L23 OR L24
 OR L25 OR L26 OR L27 OR L28 OR L29 OR L30 OR L31 OR L32
 OR L33 OR L34 OR L35 OR L36 OR L37 OR L38 OR L39 OR L40
 OR L41 OR L42 OR L43 OR L44 OR L45 OR L46 OR L47 OR
 L48))
L51 19687 SEA ABB=ON PLU=ON L50 AND (RED# OR REDDISH OR YELLOW?
 OR GREEN? OR ORANG?)
L52 4388 SEA ABB=ON PLU=ON (CADMIUM OR CD) (3A) (ABSENT? OR
 ABSENC? OR NOT#(W) (PRESENT# OR ANY) OR MISSING? OR

LACK##### OR OMIT##### OR FREE##### OR WITHOUT##### OR DEVOID#)

L53 30 SEA ABB=ON PLU=ON L51 AND L52

L54 410 SEA ABB=ON PLU=ON VACUUM# AND ANOD? AND (ELECTRON#(2A) (SOURCE OR BEAM? OR RADIAT?))

L55 0 SEA ABB=ON PLU=ON L54 AND L53

L56 0 SEA ABB=ON PLU=ON L54 AND L52

L57 153415 SEA ABB=ON PLU=ON ELECTRON#(2A) (SOURCE OR BEAM? OR RADIAT?)

L58 1 SEA ABB=ON PLU=ON L57 AND L53

L59 410 SEA ABB=ON PLU=ON L57 AND L54

L60 45434 SEA ABB=ON PLU=ON CRT# OR (DISPLAY? OR ELECTROCHROMIC## OR ORHOTOELECTROCHROMIC##)(2A) (DEVICE## OR UNIT##) OR (CATHODE## OR CATHODE#(A)RAY### OR TELEVISION#)(2A) (TUBE# # OR SCREEN# OR DISPLAY####)

L61 19527 SEA ABB=ON PLU=ON (COMP# OR COMPUTER## OR PORTABLE? OR LAPTOP? OR PLASMA## OR TV OR TELEVISION)(2A) (DISPLAY? OR SCREEN? OR MONITOR?)

L62 8 SEA ABB=ON PLU=ON (L60 OR L61) AND L53
D QUE L51
D QUE L59

L63 0 SEA ABB=ON PLU=ON L59 AND L52

L64 19 SEA ABB=ON PLU=ON (L60 OR L61) AND L52

L65 31 SEA ABB=ON PLU=ON (L60 OR L61) AND L59
D QUE

L66 4 SEA ABB=ON PLU=ON L65 AND L51
D SCAN
D QUE L64
D QUE L53

L67 961 SEA ABB=ON PLU=ON (L60 OR L61) AND L51

L68 8 SEA ABB=ON PLU=ON L67 AND L52

L69 4 SEA ABB=ON PLU=ON L67 AND L54
D QUE

L70 34 SEA ABB=ON PLU=ON L53 OR L58 OR L62 OR L66 OR L68 OR L69
D QUE

L71 42 SEA ABB=ON PLU=ON (L4 OR STRONTIUM#(A)TITANATE# OR SRTIO3)(3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (PRASEODYMIUM OR PR OR L7)

L72 47 SEA ABB=ON PLU=ON (L4 OR STRONTIUM#(A)TITANATE# OR SRTIO3)(3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (AL OR ALUMINUM OR ALUMINIUM OR L9)
D QUE L71

L73 21 SEA ABB=ON PLU=ON (L4 OR STRONTIUM#(A)TITANATE# OR SRTIO3)(3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (AL OR ALUMINUM OR ALUMINIUM OR L9)(3A) (PRASEODYMIUM OR PR OR L7)

L74 811 SEA ABB=ON PLU=ON (L10 OR ZINC(A) (SULFIDE OR MONOSULFID E) OR ZNS)(3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (COPPER OR CU OR L6)

L75 38 SEA ABB=ON PLU=ON (L10 OR ZINC(A) (SULFIDE OR MONOSULFID E) OR ZNS)(3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (GOLD OR AU OR L5)

L76 221 SEA ABB=ON PLU=ON (L10 OR ZINC(A) (SULFIDE OR MONOSULFID E) OR ZNS) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (ALUMINUM OR ALUMINIUM OR AL OR L9)

L77 63 SEA ABB=ON PLU=ON (L10 OR ZINC(A) (SULFIDE OR MONOSULFID E) OR ZNS) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (ALUMINUM OR ALUMINIUM OR AL OR L9) (3A) (COPPER OR CU OR L6)

L78 8 SEA ABB=ON PLU=ON (L10 OR ZINC(A) (SULFIDE OR MONOSULFID E) OR ZNS) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (ALUMINUM OR ALUMINIUM OR AL OR L9) (3A) (GOLD OR AU OR L5)
 D QUE L71
 D QUE L72
 D QUE L73
 D QUE L74
 D QUE L75
 D QUE L76
 D QUE L77
 D QUE L78

L79 6 SEA ABB=ON PLU=ON (L10 OR ZINC(A) (SULFIDE OR MONOSULFID E) OR ZNS) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (ALUMINUM OR ALUMINIUM OR AL OR L9) (3A) (COPPER OR CU OR L6) (3A) (GOLD OR AU OR L5)
 D QUE L48

L80 42 SEA ABB=ON PLU=ON (GALLIUM(3A)MANGANESE(3A)ZINC(3A)OXIDE OR (GA(3A)MN(3A)ZN(3A)O)) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (MANGANESE OR MN OR L8)

L81 1062 SEA ABB=ON PLU=ON (L71 OR L72 OR L73 OR L74 OR L75 OR L76 OR L77 OR L78 OR L79 OR L80)

L82 846 SEA ABB=ON PLU=ON L81 AND L49

L83 244 SEA ABB=ON PLU=ON L82 AND L51

L84 2 SEA ABB=ON PLU=ON L83 AND L52

L85 0 SEA ABB=ON PLU=ON L83 AND L59

L86 0 SEA ABB=ON PLU=ON L83 AND L65

L87 37 SEA ABB=ON PLU=ON L83 AND (L60 OR L61)

L88 5 SEA ABB=ON PLU=ON L87 AND L57
 D QUE L85

L89 0 SEA ABB=ON PLU=ON L87 AND L54
 D QUE L87

L90 39 SEA ABB=ON PLU=ON L70 OR L84 OR L88
 D QUE L90

FILE 'HCA' ENTERED AT 14:35:25 ON 24 MAR 2005

L91 48085 SEA ABB=ON PLU=ON ELECTROLUM!N?

L92 21523 SEA ABB=ON PLU=ON L91 AND ((L21 OR L22 OR L23 OR L24 OR L25 OR L26 OR L27 OR L28 OR L29 OR L30 OR L31 OR L32 OR L33 OR L34 OR L35 OR L36 OR L37 OR L38 OR L39 OR L40 OR L41 OR L42 OR L43 OR L44 OR L45 OR L46 OR L47 OR L48) OR L81)
 D QUE L50
 D QUE L51

L93 3410 SEA ABB=ON PLU=ON L92 AND (RED# OR REDDISH OR YELLOW? OR GREEN? OR ORANG?)

L94 7 SEA ABB=ON PLU=ON L93 AND L52
L95 0 SEA ABB=ON PLU=ON L93 AND L58
L96 58 SEA ABB=ON PLU=ON L93 AND L57
L97 9 SEA ABB=ON PLU=ON L96 AND (L60 OR L61)
L98 44 SEA ABB=ON PLU=ON L94 OR L97 OR L90

=> => d que 198

L3 1 SEA FILE=REGISTRY ABB=ON PLU=ON 12064-18-5/RN
L4 1 SEA FILE=REGISTRY ABB=ON PLU=ON 12060-59-2/RN
L5 1 SEA FILE=REGISTRY ABB=ON PLU=ON 7440-57-5/RN
L6 1 SEA FILE=REGISTRY ABB=ON PLU=ON 7440-50-8/RN
L7 1 SEA FILE=REGISTRY ABB=ON PLU=ON 7440-10-0/RN
L8 1 SEA FILE=REGISTRY ABB=ON PLU=ON 7439-96-5/RN
L9 1 SEA FILE=REGISTRY ABB=ON PLU=ON 7429-90-5/RN
L10 1 SEA FILE=REGISTRY ABB=ON PLU=ON 1314-98-3/RN
L11 9 SEA FILE=REGISTRY ABB=ON PLU=ON (SR(L)TI(L)O(L)PR)/ELS(L)4/ELC.SUB
L13 38 SEA FILE=REGISTRY ABB=ON PLU=ON (SR(L)TI(L)O(L)AL)/ELS(L)4/ELC.SUB
L14 4 SEA FILE=REGISTRY ABB=ON PLU=ON (ZN(L)S(L)CU(L)AL)/ELS(L)4/ELC.SUB
L16 19 SEA FILE=REGISTRY ABB=ON PLU=ON (ZN(L)S(L)CU)/ELS(L)3/E
LC.SUB
L17 3 SEA FILE=REGISTRY ABB=ON PLU=ON (ZN(L)S(L)AL)/ELS(L)3/E
LC.SUB
L20 11 SEA FILE=REGISTRY ABB=ON PLU=ON (ZN(L)GA(L)O(L)MN)/ELS(L)4/ELC.SUB
L21 403 SEA FILE=HCA ABB=ON PLU=ON L3
L22 608 SEA FILE=HCA ABB=ON PLU=ON GALLIUM(W)ZINC(W)OXIDE OR
GA2ZNO4OR ZINC(W)GALLIUM(W)OXIDE OR ZNGA2O4
L23 14136 SEA FILE=HCA ABB=ON PLU=ON L4
L24 19908 SEA FILE=HCA ABB=ON PLU=ON STRONTIUM#(A)TITANATE# OR
SRTIO3
L25 147195 SEA FILE=HCA ABB=ON PLU=ON L5
L26 251391 SEA FILE=HCA ABB=ON PLU=ON GOLD OR AU
L27 480212 SEA FILE=HCA ABB=ON PLU=ON L6
L28 1098393 SEA FILE=HCA ABB=ON PLU=ON CU OR COPPER
L29 19596 SEA FILE=HCA ABB=ON PLU=ON L7
L30 167708 SEA FILE=HCA ABB=ON PLU=ON PRASEODYMIUM OR PR
L31 171501 SEA FILE=HCA ABB=ON PLU=ON L8
L32 546903 SEA FILE=HCA ABB=ON PLU=ON MANGANESE OR MN
L33 354400 SEA FILE=HCA ABB=ON PLU=ON L9
L34 1324892 SEA FILE=HCA ABB=ON PLU=ON AL OR ALUMINUM OR ALUMINIUM
L35 25460 SEA FILE=HCA ABB=ON PLU=ON L10
L36 35413 SEA FILE=HCA ABB=ON PLU=ON ZINC(A)(SULFIDE OR MONOSULFIDE) OR ZNS
L37 9 SEA FILE=HCA ABB=ON PLU=ON L11
L38 18 SEA FILE=HCA ABB=ON PLU=ON PRASEODYMIUM(2A)STRONTIUM(2A)
)TITANIUM(2A)OXIDE OR (PR(2A)SR(2A)TI(2A)O)
L39 24 SEA FILE=HCA ABB=ON PLU=ON L13
L40 96 SEA FILE=HCA ABB=ON PLU=ON ALUMINUM(3A)STRONTIUM(3A)TITANIUM(3A)OXIDE OR (AL(3A)SR(3A)TI(3A)O)

L41 3 SEA FILE=HCA ABB=ON PLU=ON L14
L42, 386 SEA FILE=HCA ABB=ON PLU=ON ALUMINUM(3A)COPPER(3A)ZINC(3
 A)SULFIDE OR (AL(3A)CU(3A)ZN(3A)S)
L43 40 SEA FILE=HCA ABB=ON PLU=ON L16
L44 5447 SEA FILE=HCA ABB=ON PLU=ON COPPER(3A)ZINC(3A)SULFIDE
 OR (CU(3A)ZN(3A)S)
L45 59 SEA FILE=HCA ABB=ON PLU=ON L17
L46 1107 SEA FILE=HCA ABB=ON PLU=ON ALUMINUM(3A)ZINC(3A)SULFIDE
 OR AL2ZNS4 OR (AL(3A)ZN(3A)S) OR ZNAL2S4
L47 17 SEA FILE=HCA ABB=ON PLU=ON L20
L48 97 SEA FILE=HCA ABB=ON PLU=ON GALLIUM(3A)MANGANESE(3A)ZINC
 (3A)OXIDE OR (GA(3A)MN(3A)ZN(3A)O)
L49 882677 SEA FILE=HCA ABB=ON PLU=ON (EL OR E(W)L OR LED OR
 L(W)E(W)D OR OLED ELECTROLUM!N? OR ORGANOLUM!N? OR
 (ELECTRO OR ORGANO OR ORG#)(2A)LUM!N? OR LIGHT?(2A)(EMIT?
 OR EMISSION? OR SOURCE?) OR LUMINES##### OR FLUORES?
 OR PHOSPHORES?)/BI,AB OR LED/IT OR PHOSPHOR# OR LUMIN?
L50 132749 SEA FILE=HCA ABB=ON PLU=ON L49 AND ((L21 OR L22 OR L23
 OR L24 OR L25 OR L26 OR L27 OR L28 OR L29 OR L30 OR L31
 OR L32 OR L33 OR L34 OR L35 OR L36 OR L37 OR L38 OR L39
 OR L40 OR L41 OR L42 OR L43 OR L44 OR L45 OR L46 OR L47
 OR L48))
L51 19687 SEA FILE=HCA ABB=ON PLU=ON L50 AND (RED# OR REDDISH OR
 YELLOW? OR GREEN? OR ORANG?)
L52 4388 SEA FILE=HCA ABB=ON PLU=ON (CADMIUM OR CD)(3A)(ABSENT?
 OR ABSENC? OR NOT#(W)(PRESENT# OR ANY) OR MISSING? OR
 LACK#### OR OMIT##### OR FREE##### OR WITHOUT### OR
 DEVOID#)
L53 30 SEA FILE=HCA ABB=ON PLU=ON L51 AND L52
L54 410 SEA FILE=HCA ABB=ON PLU=ON VACUUM# AND ANOD? AND
 (ELECTRON#(2A)(SOURCE OR BEAM? OR RADIAT?))
L57 153415 SEA FILE=HCA ABB=ON PLU=ON ELECTRON#(2A)(SOURCE OR
 BEAM? OR RADIAT?)
L58 1 SEA FILE=HCA ABB=ON PLU=ON L57 AND L53
L59 410 SEA FILE=HCA ABB=ON PLU=ON L57 AND L54
L60 45434 SEA FILE=HCA ABB=ON PLU=ON CRT# OR (DISPLAY? OR
 ELECTROCHROMIC## OR ORHOELECTROCHROMIC##)(2A)(DEVICE##
 OR UNIT##) OR (CATHODE## OR CATHODE#(A)RAY### OR
 TELEVISION#)(2A)(TUBE## OR SCREEN# OR DISPLAY####)
L61 19527 SEA FILE=HCA ABB=ON PLU=ON (COMP# OR COMPUTER## OR
 PORTABLE? OR LAPTOP? OR PLASMA## OR TV OR TELEVISION)(2A)
 (DISPLAY? OR SCREEN? OR MONITOR?)
L62 8 SEA FILE=HCA ABB=ON PLU=ON (L60 OR L61) AND L53
L65 31 SEA FILE=HCA ABB=ON PLU=ON (L60 OR L61) AND L59
L66 4 SEA FILE=HCA ABB=ON PLU=ON L65 AND L51
L67 961 SEA FILE=HCA ABB=ON PLU=ON (L60 OR L61) AND L51
L68 8 SEA FILE=HCA ABB=ON PLU=ON L67 AND L52
L69 4 SEA FILE=HCA ABB=ON PLU=ON L67 AND L54
L70 34 SEA FILE=HCA ABB=ON PLU=ON L53 OR L58 OR L62 OR L66 OR
 L68 OR L69
L71 42 SEA FILE=HCA ABB=ON PLU=ON (L4 OR STRONTIUM#(A)TITANATE
 # OR SRTIO3)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE#
 OR INTERSPER?)(3A)(PRASEODYMIUM OR PR OR L7)

L72 47 SEA FILE=HCA ABB=ON PLU=ON (L4 OR STRONTIUM#(A)TITANATE # OR SRTIO3) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (AL OR ALUMINUM OR ALUMINIUM OR L9)

L73 21 SEA FILE=HCA ABB=ON PLU=ON (L4 OR STRONTIUM#(A)TITANATE # OR SRTIO3) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (AL OR ALUMINUM OR ALUMINIUM OR L9) (3A) (PRASEODYMIUM OR PR OR L7)

L74 811 SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A) (SULFIDE OR MONOSULFIDE) OR ZNS) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (COPPER OR CU OR L6)

L75 38 SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A) (SULFIDE OR MONOSULFIDE) OR ZNS) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (GOLD OR AU OR L5)

L76 221 SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A) (SULFIDE OR MONOSULFIDE) OR ZNS) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (ALUMINUM OR ALUMINIUM OR AL OR L9)

L77 63 SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A) (SULFIDE OR MONOSULFIDE) OR ZNS) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (ALUMINUM OR ALUMINIUM OR AL OR L9) (3A) (COPPER OR CU OR L6)

L78 8 SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A) (SULFIDE OR MONOSULFIDE) OR ZNS) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (ALUMINUM OR ALUMINIUM OR AL OR L9) (3A) (GOLD OR AU OR L5)

L79 6 SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A) (SULFIDE OR MONOSULFIDE) OR ZNS) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (ALUMINUM OR ALUMINIUM OR AL OR L9) (3A) (COPPER OR CU OR L6) (3A) (GOLD OR AU OR L5)

L80 42 SEA FILE=HCA ABB=ON PLU=ON (GALLIUM(3A)MANGANESE(3A)ZINC(3A)OXIDE OR (GA(3A)MN(3A)ZN(3A)O)) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (MANGANESE OR MN OR L8)

L81 1062 SEA FILE=HCA ABB=ON PLU=ON (L71 OR L72 OR L73 OR L74 OR L75 OR L76 OR L77 OR L78 OR L79 OR L80)

L82 846 SEA FILE=HCA ABB=ON PLU=ON L81 AND L49

L83 244 SEA FILE=HCA ABB=ON PLU=ON L82 AND L51

L84 2 SEA FILE=HCA ABB=ON PLU=ON L83 AND L52

L87 37 SEA FILE=HCA ABB=ON PLU=ON L83 AND (L60 OR L61)

L88 5 SEA FILE=HCA ABB=ON PLU=ON L87 AND L57

L90 39 SEA FILE=HCA ABB=ON PLU=ON L70 OR L84 OR L88

L91 48085 SEA FILE=HCA ABB=ON PLU=ON ELECTROLUM!N?

L92 21523 SEA FILE=HCA ABB=ON PLU=ON L91 AND ((L21 OR L22 OR L23 OR L24 OR L25 OR L26 OR L27 OR L28 OR L29 OR L30 OR L31 OR L32 OR L33 OR L34 OR L35 OR L36 OR L37 OR L38 OR L39 OR L40 OR L41 OR L42 OR L43 OR L44 OR L45 OR L46 OR L47 OR L48) OR L81)

L93 3410 SEA FILE=HCA ABB=ON PLU=ON L92 AND (RED# OR REDDISH OR YELLOW? OR GREEN? OR ORANG?)

L94 7 SEA FILE=HCA ABB=ON PLU=ON L93 AND L52

L96 58 SEA FILE=HCA ABB=ON PLU=ON L93 AND L57

L97 9 SEA FILE=HCA ABB=ON PLU=ON L96 AND (L60 OR L61)

L98 44 SEA FILE=HCA ABB=ON PLU=ON L94 OR L97 OR L90

=> d 198 1-44 cbib abs hitstr hitind

L98 ANSWER 1 OF 44 HCA COPYRIGHT 2005 ACS on STN
141:233117 Development of OLED with high stability and **luminance** efficiency by co-doping methods for full color displays. Kanno, Hiroshi; Hamada, Yuji; Takahashi, Hisakazu (Display Devices Department, Materials and Devices Development Center BU, Sanyo Electric Company, Ltd., Osaka, 573-8534, Japan). IEEE Journal of Selected Topics in Quantum Electronics, 10(1), 30-36 (English) 2004. CODEN: IJSQEN. ISSN: 1077-260X. Publisher: Institute of Electrical and Electronics Engineers.

AB The authors propose co-doping systems in emission layers of **red-** and **green** organic **light-emitting** diodes (OLEDs). The **luminance-voltage**, **luminous** and power efficiency-voltage characteristics, operational stability, and the energy bands of materials were measured. In **red** OLED devices, the authors propose an emitting assist (EA) dopant for better **luminance** efficiency and power efficiency with pure **red** emission and improved operational stability. The EA dopant (rubrene) did not emit itself but assisted the energy transfer from a host (Alq) to an emitting dopant (DCJTB). By doping rubrene, the **luminance** efficiency increased from 1.7 to 4.3 cd/A (from 0.6 to 1.9 lm/W) with chromaticity of ($x = 0.64$, $y = 0.36$) unchanged. An improved lifetime was also observed. In **green** OLED devices, the authors introduced hole transporting material (NPB) into an emission layer for better charge injection balance. The **green** devices with the emitting dopant (C545T) achieved the **luminance** efficiency of 8.5 cd/A compared with 6.9 cd/A without NPB. The authors studied the co-doping methods and use of this approach for active-matrix full color display. The power consumption of white emission at 100 cd/m² was reduced by 32%. The effectiveness of these co-doping methods was demonstrated for practical applications.

IT 7429-90-5, **Aluminum**, uses

RL: DEV (Device component use); USES (Uses)
(full color organic **light-emitting** displays with high stability and **luminance** efficiency containing co-dopant in emission layers)

RN 7429-90-5 HCA

CN Aluminum (8CI, 9CI) (CA INDEX NAME)

A1

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

ST emission layer codoping OLED full color display; active matrix full color **light emitting** diode display codoping

IT Luminescence

Luminescence, electroluminescence

(co-doping systems in emission layers of **red-** and **green** organic **light-emitting** diodes for full color displays)

IT **Electroluminescent devices**

(displays, OLED; full color organic **light-emitting** displays with high stability and **luminance** efficiency containing co-dopant in emission layers)

IT **Luminescent screens**

(electroluminescent, OLED; full color organic **light-emitting** displays with high stability and **luminance** efficiency containing co-dopant in emission layers)

IT **Doping**

(full color organic **light-emitting** displays with high stability and **luminance** efficiency containing co-dopant in emission layers)

IT 2085-33-8, AlQ3

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(emission layer; full color organic **light-emitting** displays with high stability and **luminance** efficiency containing co-dopant in emission layers)

IT 517-51-1, Rubrene

RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(emitting assist dopant; full color organic **light-emitting** displays with high stability and **luminance** efficiency containing co-dopant in emission layers)

IT 155306-71-1, C545T

RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(emitting dopant; co-doping systems in emission layers of **red-** and **green** organic **light-emitting** diodes for full color displays)

IT 200052-70-6, DCJTB

RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(emitting layer dopant; full color organic **light-emitting** displays with high stability and **luminance** efficiency containing co-dopant in emission layers)

IT 7429-90-5, Aluminum, uses 7789-24-4, Lithium

fluoride, uses 50926-11-9, ITO

RL: DEV (Device component use); USES (Uses)

(full color organic **light-emitting** displays with high stability and **luminance** efficiency containing co-dopant in emission layers)

IT 123847-85-8, NPB

RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC

(Process); USES (Uses)

(hole transport layer; full color organic light-emitting displays with high stability and luminance efficiency containing co-dopant in emission layers)

L98 ANSWER 2 OF 44 HCA COPYRIGHT 2005 ACS on STN

140:225970 Yellow-emitting phosphors for low-energy electron beams, and vacuum fluorescent

displays employing same. Oshima, Hidenori (Noritake Itron Corp., Japan; Noritake Co., Ltd.). Jpn. Kokai Tokkyo Koho JP 2004075900 A2 20040311, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-239742 20020820.

AB The phosphors are made of Mn-activated Ca In compound oxides. The phosphors are Cd-free and do not cause deterioration of cathodes of the displays since free from gas generation upon usage.

IT 7439-96-5, Manganese, uses

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(activator; yellow-emitting phosphors for low-energy electron beams made of Mn-activated Ca In oxides for vacuum fluorescent displays)

RN 7439-96-5 HCA

CN Manganese (8CI, 9CI) (CA INDEX NAME)

Mn

IC ICM C09K011-62

ICS C09K011-08; H01J029-20; H01J031-15

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

ST yellow phosphor manganese activated calcium indium oxide; electron beam phosphor manganese activated calcium indium oxide; vacuum fluorescent display yellow phosphor

IT Optical imaging devices

(vacuum fluorescent displays; yellow-emitting phosphors for low-energy electron beams made of Mn-activated Ca In oxides for vacuum fluorescent displays)

IT Phosphors

(yellow-emitting; yellow-emitting phosphors for low-energy electron beams made of Mn-activated Ca In oxides for vacuum fluorescent displays)

IT 7439-96-5, Manganese, uses

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(activator; yellow-emitting phosphors for

low-energy **electron beams** made of **Mn**
 -activated Ca In oxides for vacuum **fluorescent**
 displays)

IT 12013-41-1P, Calcium indium oxide (cain2o4)
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM
 (Technical or engineered material use); PREP (Preparation); USES
 (Uses)
 (host; **yellow-emitting phosphors** for
 low-energy **electron beams** made of **Mn**
 -activated Ca In oxides for vacuum **fluorescent**
 displays)

L98 ANSWER 3 OF 44 HCA COPYRIGHT 2005 ACS on STN
 139:330018 **Electroluminescence** from Hybrid Conjugated
 Polymer-CdS:**Mn/ZnS** Core/Shell Nanocrystals
 Devices. Yang, Heesun; Holloway, Paul H. (Department of Materials
 Science and Engineering, University of Florida, Gainesville, FL,
 32611-6400, USA). Journal of Physical Chemistry B, 107(36),
 9705-9710 (English) 2003. CODEN: JPCBFK. ISSN: 1520-6106.
 Publisher: American Chemical Society.

AB Reverse micelle-derived CdS:**Mn/ZnS** core/shell
 nanocrystals were synthesized with a core crystal diameter of 2.3 nm
 and a 0.4 nm thick **ZnS** shell and used as an
electroluminescent material. D.c. (d.c.)
electroluminescent (EL) devices were tested having
 a hybrid organic/inorg. multilayer structure of ITO//PEDOT-
 PSS//conjugated polymer//CdS:**Mn/ZnS**
 nanocrystal//Al, where 2 different conjugated polymers
 (poly(N-vinylcarbazole) (PVK) and poly(p-phenylenevinylene) (PPV))
 were used. The poly(3,4-ethylenedioxythiophene)/poly(styrenesulfonate)
 (PEDOT-PSS) layer was used for enhanced hole injection from the
 ITO electrode. **Orange** and **green EL**
 emission was observed from devices with PVK and PPV devices, resp.
 These data mean that electron-hole recombination is confined to the
 CdS:**Mn/ZnS** nanocryst. layer in PVK-based devices
 but occurs in the PPV layer in PPV-based devices. Compared to a PPV
EL device without a CdS:**Mn/ZnS**
ZnS layer, the hybrid PPV-based nanocryst. **EL**
 device showed large current flow and considerably enhanced
EL emission. Probably the CdS:**Mn/ZnS**
 nanocrystal layer serves as an electron transport layer (ETL) in the
 hybrid device. These observations are consistent with the energy
 level diagrams of the **EL** devices.

IT 7439-96-5, **Manganese**, properties
 RL: DEV (Device component use); MOA (Modifier or additive use); PEP
 (Physical, engineering or chemical process); PRP (Properties); PYP
 (Physical process); PROC (Process); USES (Uses)
 (**electroluminescence** from hybrid conjugated polymer
 cadmium sulfide/zinc sulfide
 core/shell nanocrystals devices doped with)

RN 7439-96-5 HCA
 CN Manganese (8CI, 9CI) (CA INDEX NAME)

Mn

IT 1314-98-3, Zinc sulfide, properties
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
 (electroluminescence from hybrid conjugated polymer devices with nanocrystals of manganese-doped cadmium sulfide core and shell of)
 RN 1314-98-3 HCA
 CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S==Zn

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 38, 76
 ST electroluminescence hybrid conjugated polymer cadmium zinc sulfide manganese nanocrystal; luminescence electro conjugated polymer cadmium zinc sulfide manganese nanocrystal
 IT Polymers, properties
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
 (conjugated; electroluminescence from manganese -doped cadmium sulfide/zinc sulfide core/shell nanocrystals devices hybrid with)
 IT Electric conductivity
 Electron-hole recombination
 (in hybrid conjugated polymer-manganese-doped cadmium sulfide/zinc sulfide core/shell nanocrystals devices)
 IT Electric current-potential relationship
 Electroluminescent devices
 Luminescence
 Luminescence, electroluminescence
 Transmission electron microscopy
 (of hybrid conjugated polymer-manganese-doped cadmium sulfide/zinc sulfide core/shell nanocrystals devices)
 IT Micelles
 (reverse; electroluminescence from hybrid conjugated polymer-manganese-doped cadmium sulfide/zinc sulfide core/shell nanocrystals devices derived from)
 IT 7439-96-5, Manganese, properties
 RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
 (electroluminescence from hybrid conjugated polymer

- cadmium sulfide/zinc sulfide
core/shell nanocrystals devices doped with)
- IT 1314-98-3, Zinc sulfide, properties
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
 (electroluminescence from hybrid conjugated polymer devices with nanocrystals of manganese-doped cadmium sulfide core and shell of)
- IT 1306-23-6, Cadmium sulfide, properties
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
 (electroluminescence from hybrid conjugated polymer devices with nanocrystals of zinc sulfide shell and core of manganese-doped)
- IT 25067-59-8, Poly(N-vinylcarbazole) 26009-24-5,
 Poly(p-phenylenevinylene) 50851-57-5 126213-51-2,
 Poly(3,4-ethylenedioxythiophene)
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
 (electroluminescence from manganese-doped cadmium sulfide/zinc sulfide core/shell nanocrystals devices hybrid with)

L98 ANSWER 4 OF 44 HCA COPYRIGHT 2005 ACS on STN

139:171383 Cathode-ray tube using phosphor with prolonged life for projector in television.
 Igarashi, Takahiro; Kusunoki, Tsuneo; Ono, Katsutoshi (Sony Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2003234075 A2 20030822, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-31192 20020207.

AB The cathode-ray tube has a light emission layer made of (a) blue light-emitting Ag- and Al-doped ZnS particles, (b) green light-emitting Tb-doped Y₂SiO₅ particles, and/or (c) red light-emitting Eu-doped Y₂O₃ with particle diameter 5-7 μm on a fluorescent layer. The phosphors, showing prolonged life, provide the TV projector with reduced electron beam size spots without browning of the cathode-ray tube walls.

IT 7429-90-5, Aluminum, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (dopant; cathode-ray tube using electroluminescent phosphor containing)

RN 7429-90-5 HCA

CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

IT 1314-98-3, Zinc sulfide, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(silver- and aluminum-doped; **cathode-ray tube** using **electroluminescent phosphor** with prolonged life for projector in television)

RN 1314-98-3 HCA

CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S== Zn

IC ICM H01J031-10
ICS C09K011-08; C09K011-56; C09K011-78; C09K011-79; H01J029-20

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73

ST **cathode ray tube fluorescent**
layer phosphor; **long life phosphor**
cathode ray tube; **television projector**
cathode ray tube; **silver**
aluminum doped zinc sulfide
phosphor; **terbium doped yttrium silicon oxide**
phosphor; **euroium doped yttrium oxide phosphor**

IT **Cathode ray tubes**
Projection apparatus
 Television
 (**cathode-ray tube** using
 electroluminescent phosphor with prolonged life
 for projector in television)

IT **Phosphors**
 (**electroluminescent**; **cathode-ray**
 tube using **electroluminescent phosphor**
 with prolonged life for projector in television)

IT 7429-90-5, Aluminum, uses 7440-22-4, Silver,
uses 7440-27-9, Terbium, uses 7440-53-1, Euroium, uses
RL: MOA (Modifier or additive use); USES (Uses)
 (dopant; **cathode-ray tube** using
 electroluminescent phosphor containing)

IT 1314-36-9, Yttrium oxide (Y2O3), uses
RL: TEM (Technical or engineered material use); USES (Uses)
 (euroium-doped; **cathode-ray tube**
 using **electroluminescent phosphor** with
 prolonged life for projector in television)

IT 1314-98-3, Zinc sulfide, uses
RL: TEM (Technical or engineered material use); USES (Uses)
 (silver- and aluminum-doped; **cathode-ray tube** using **electroluminescent phosphor** with prolonged life for projector in television)

IT 12027-88-2, Silicon yttrium oxide (SiY2O5)
RL: TEM (Technical or engineered material use); USES (Uses)
 (terbium-doped; **cathode-ray tube**
 using **electroluminescent phosphor** with
 prolonged life for projector in television)

L98 ANSWER 5 OF 44 HCA COPYRIGHT 2005 ACS on STN
 138:129134 El panel using phosphor films. Yano, Yoshihiko; Nagano, Katsuto (TDK Corporation, Japan). Eur. Pat. Appl. EP 1279718 A2 20030129, 11 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR. (English). CODEN: EPXXDW. APPLICATION: EP 2001-308427 20011002. PRIORITY: JP 2001-228272 20010727.

AB An EL panel comprising EL phosphor films of three types which emit red, green and blue light, resp., containing europium as a luminescence center is described wherein the EL phosphor films of three types have the compositional formula AxByOzSw:R wherein A = Mg, Ca, Sr, Ba or rare earth elements, B = Al, Ga or In, x = 0-5, y = 0-15, z = 0-30, w = 0-30, and R = the luminescence center containing europium.

IT 1314-98-3, Zinc sulfide (ZnS),
 uses
 RL: DEV (Device component use); USES (Uses)
 (phosphor; **electroluminescent** panel using three color phosphor films)

RN 1314-98-3 HCA

CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S==Zn

IC ICM C09K011-84
 ICS H05B033-18; H05B033-14

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 76

ST **electroluminescent** panel phosphor film

IT **Electroluminescent devices**
 (displays; **electroluminescent** panel using three color phosphor films)

IT Luminescent screens
 (**electroluminescent**; **electroluminescent** panel using three color phosphor films)

IT 1302-81-4, Aluminum sulfide (Al₂S₃) 12024-22-5, Gallium sulfide (Ga₂S₃) 20548-54-3, Calcium sulfide (CaS)
 RL: DEV (Device component use); USES (Uses)
 (electron beam source;
electroluminescent panel using three color phosphor films)

IT 1314-98-3, Zinc sulfide (ZnS),
 uses 1344-28-1, Alumina, uses 12004-37-4, **Aluminum** strontium oxide (Al₂SrO₄) 12592-70-0, Gallium strontium sulfide (Ga₂SrS₄) 51403-77-1, **Aluminum** barium sulfide (Al₂BaS₄)
 RL: DEV (Device component use); USES (Uses)
 (phosphor; **electroluminescent** panel using three color phosphor films)

IT 7440-53-1, Europium, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(phosphor; **electroluminescent** panel using three color phosphor films)

IT 12047-27-7, Barium titanate (BaTiO₃), uses
RL: DEV (Device component use); USES (Uses)
(substrate, buffer layer; **electroluminescent** panel using three color phosphor films)

IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); USES (Uses)
(substrate; **electroluminescent** panel using three color phosphor films)

L98 ANSWER 6 OF 44 HCA COPYRIGHT 2005 ACS on STN

137:207921 YAGG: Tb, Gd **green** phosphor used for FED. Li, Lan;
Liang, Cui-guo; Xie, Bao-sen; Zhao, Shou-zhen; Du, Zhong; Zou,
Kaishun; Xiong, Guang-nan (Institute of Information, Hebei
University of Industry, Tianjin, 300130, Peop. Rep. China). Faguang
Xuebao, 23(3), 252-254 (Chinese) 2002. CODEN: FAXUEW. ISSN:
1000-7032. Publisher: Kexue Chubanshe.

AB Recent development of field emission **display** (FED)
device require searching for some new kind of phosphor material which can possess low excitation potential, chemical and thermal stability, long service life at high current densities. YAGG:Tb phosphor was used as an **green** phosphor for PTV application. It shows **green** emission with high brightness and good chromaticity under high energy **electron beam** excitation. The co-activated lanthanon such as Ce, Dy, Gd was study sep. and exhibited good brightness. The authors synthesize and carry on surface perfect the phosphor and try this phosphor to be used in low voltage range such as 0-3000 V which is suitable for FED. The YAGG:Tb, Gd powder was synthesized by heating highly pure powders of Tb₂O₃, Ga₂O₃, Gd₂O₃, Al₂O₃, and other flux at 1400-1500° in the air. After that, acid and pure H₂O was used to clean the phosphor. At last, polymer binder was used to film the phosphor. The emission peak of YAGG:Tb, Gd excited by electron ray was in 544 nm similar with YAGG:Tb. Its relative luminescent brightness change with voltage of electron ray was show in Fig. 1. The properties of traditional **green** phosphor ZnO:Zn was used as standard. The relative brightness of YAGG:Tb is higher than that of ZnO:Zn at 0-3000 V excited voltage and the dead voltage was similar with ZnO:Zn. It has not saturation situation as ZnO:Zn. Fig. 2 shows the change curve of relative brightness of YAGG:Tb, Gd and ZnO:Zn with excited c.d. YAGG:Tb, Gd also shows the good behavior. The YAGG:Tb, Gd was synthesized and improved with suitable method. After compared with ZnO:Zn, it will be more effective at strong excited condition.

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **aluminum** gallium yttrium oxide terbium gadolinium phosphor

IT Field emission displays
Luminescence, **electroluminescence**

Phosphors

(YAGG: Tb, Gd **green** phosphor used for FED)

IT 110621-14-2, **Aluminum** gallium yttrium oxide ((Al

,Ga)5Y3O12)
 RL: DEV (Device component use); USES (Uses)
 (YAGG: Tb, Gd **green** phosphor used for FED)
 IT 7440-27-9, Terbium, uses 7440-54-2, Gadolinium, uses.
 RL: MOA (Modifier or additive use); USES (Uses)
 (YAGG: Tb, Gd **green** phosphor used for FED)

L98 ANSWER 7 OF 44 HCA COPYRIGHT 2005 ACS on STN
 136:285971 Thin ZnS:Cu,Ga and ZnO:Cu,Ga
 film **phosphors**. Kryshtab, T. G.; Khomchenko, V. S.;
 Papusha, V. P.; Mazin, M. O.; Tzyrkunov, Yu. A. (Department of
 Material Sciences, ESFM-Institute Polytechnic National, U.P.A.L.M.,
 Mexico City, 07738, Mex.). Thin Solid Films, 403-404, 76-80
 (English) 2002. CODEN: THSFAP. ISSN: 0040-6090. Publisher:
 Elsevier Science S.A..

AB A new technique for electro- and cathodoluminescent screen
 fabrication with the application of a new method of **doping**
ZnS:Cu and **ZnO:Cu** thin film
phosphors is proposed. Thin films of **ZnS:Cu** were grown by **electron-beam** evaporation
 (EBE) from a **ZnS:Cu** target on substrates heated
 to 150-200°, and the Cu concentration in the target was
 varied from 0.06 to 0.25 weight %. BaTiO₃ and sapphire single crystal
 substrates were used. The film thickness varied from 0.6 to 9
 μm. Parameters of **ZnS:Cu** films grown by EBE
 were modified using non-vacuum annealing at 700-1000° in
 S₂-rich or O₂-rich atmospheric both with and without Ga co-doping. The
 measurement of **electroluminescent (EL)** and
 cathodoluminescent (CL) parameters, as well as XRD techniques and
 atomic force microscopy (AFM) were used for this research. The
EL **ZnS:Cu,Ga** blue color emission film
 with a luminance of 30 cd/m² and **green** (**yellow**) color emission film with a luminance of
 800 cd/m² were obtained. Devices with such films have a threshold
 voltage of 10 V The CL luminance was 200 cd/m² for
ZnS:Cu,Ga and 1100 cd/m² for **ZnO:Cu,Ga**
 films at 300 K and 3700 cd/m² for **ZnO:Cu,Ga** films at 77 K
 The films show a deeper **green** color than com.
phosphors. Clarification that Ga co-doping affects the
 luminance, since Ga influences on recrystn. process, was
 carried out.

IT 7440-50-8, **Copper**, properties
 RL: MOA (Modifier or additive use); PEP (Physical, engineering or
 chemical process); PRP (Properties); PYP (Physical process); PROC
 (Process); USES (Uses)
 (thin **ZnS:Cu,Ga** and **ZnO:Cu,Ga** film
phosphors)

RN 7440-50-8 HCA
 CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT 1314-98-3, Zinc sulfide, properties
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
 (thin ZnS:Cu,Ga and ZnO:Cu,Ga film phosphors)
 RN 1314-98-3 HCA
 CN Zinc sulfide (Zns) (9CI) (CA INDEX NAME)

S==Zn

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 ST copper gallium doped zinc oxide sulfide film phosphor
 IT Electroluminescent devices
 (displays; thin ZnS:Cu,Ga and ZnO:Cu,Ga film phosphors)
 IT Annealing
 (effect of; thin ZnS:Cu,Ga and ZnO:Cu,Ga film phosphors)
 IT Luminescent screens
 (electroluminescent; thin ZnS:Cu,Ga and ZnO:Cu,Ga film phosphors)
 IT Cathodoluminescence
 Cathodoluminescent screens
 Electron beam evaporation
 Luminescence, electroluminescence
 Phosphors
 Surface structure
 X-ray diffraction
 (thin ZnS:Cu,Ga and ZnO:Cu,Ga film phosphors)
 IT 7782-44-7, Oxygen, occurrence
 RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
 (annealing in atmospheric rich in; thin ZnS:Cu,Ga and ZnO:Cu,Ga film phosphors)
 IT 1344-28-1, Alumina, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (sapphire substrate; thin ZnS:Cu,Ga and ZnO:Cu,Ga film phosphors)
 IT 12047-27-7, Barium titanate, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (substrate; thin ZnS:Cu,Ga and ZnO:Cu,Ga film phosphors)
 IT 7440-50-8, Copper, properties 7440-55-3,
 Gallium, properties
 RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
 (thin ZnS:Cu,Ga and ZnO:Cu,Ga film phosphors)
 IT 7704-34-9, Sulfur, occurrence

- RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
 (thin ZnS:Cu,Ga and ZnO:Cu,Ga film
phosphors)
- IT 1314-13-2, Zinc oxide, properties **1314-98-3, Zinc sulfide**, properties
 RL: PEP (Physical, engineering or chemical process); PRP
 (Properties); PYP (Physical process); PROC (Process)
 (thin ZnS:Cu,Ga and ZnO:Cu,Ga film
phosphors)
- L98 ANSWER 8 OF 44 HCA COPYRIGHT 2005 ACS on STN
 136:240587 Synthesis and study of bio-coordination compounds of Zn(II), Co(II), Cu(II) and Cd(II). Shvelasvili, A.; Beshkenadze, I.; Tskitishvili, M.; Zorzholiani, N.; Zedelashvili, E.; Tsutsunava, T.; Svanidze, O.; Tavberidze, M.; Tsiskarishvili, P.; Sakvarelidze, T. (Georgia). Izvestiya Akademii Nauk Gruzii, Seriya Khimicheskaya, 27(1-2), 19-24 (Georgian) 2001. CODEN: IANKEJ. Publisher: Metsniereba.
- AB. The methods of synthesis of new coordination compds. such as:
 $ML_2 \cdot nH_2O$ (I), $M(HL)_xSO_4 \cdot nH_2O$ (II),
 $M(HL)_x(HQ)_ySO_4 \cdot nH_2O$ (III) ($M = Zn, Co, Cu, Cd$; $HL =$
 methionine, $HQ =$ glutamic acid, $x = 1, 2, 3$; $y = 1, 2$) were
 elaborated. I were obtained in aqueous solns. at pH = 8-9. II and III
 were obtained in aqueous solution at pH = 2.3. The complexes were
 characterized by IR spectra. The introduction of these transition
 metal methionine complexes as biostimulators into fodder led
 to decrease of poultry loss, increase in live mass, reduction
 of fodder expenditures.
- IT **7440-50-8DP, Copper**, methionine complexes
 with/without glutamic acid
 RL: AGR (Agricultural use); SPN (Synthetic preparation); BIOL
 (Biological study); PREP (Preparation); USES (Uses)
 (preparation of iron/magnesium/**manganese** glutamic
 acid/methionine complexes as plant growth stimulators for poultry
 fodder)
- RN 7440-50-8 HCA
 CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)
- Cu
- CC 78-7 (Inorganic Chemicals and Reactions)
 Section cross-reference(s): 5
- IT Transition metal complexes
 RL: AGR (Agricultural use); SPN (Synthetic preparation); BIOL
 (Biological study); PREP (Preparation); USES (Uses)
 (amino acid, methionine with/without glutamic acid; preparation of
 iron/magnesium/**manganese** glutamic acid/methionine
 complexes as plant growth stimulators for poultry fodder)
- IT Amino acids, preparation
 RL: AGR (Agricultural use); SPN (Synthetic preparation); BIOL
 (Biological study); PREP (Preparation); USES (Uses)
 (transition metal complexes, methionine with/without glutamic

acid; preparation of iron/magnesium/**manganese** glutamic acid/methionine complexes as plant growth stimulators for poultry fodder)

IT 56-86-0DP, L-Glutamic acid, transition metal methionine complexes
 63-68-3DP, L-Methionine, transition metal complexes with/without glutamic acid 7440-43-9DP, **Cadmium**, methionine complexes with/without glutamic acid 7440-48-4DP, Cobalt, methionine complexes with/without glutamic acid 7440-50-8DP, **Copper**, methionine complexes with/without glutamic acid 7440-66-6DP, Zinc, methionine complexes with/without glutamic acid 13985-65-4P 19224-84-1P 40816-51-1P
 RL: AGR (Agricultural use); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (preparation of iron/magnesium/**manganese** glutamic acid/methionine complexes as plant growth stimulators for poultry fodder)

L98 ANSWER 9 OF 44 HCA COPYRIGHT 2005 ACS on STN
 134:325850 Impact of heavy metal residue on soil microbiota and growth of eucalyptus. Melloni, Rogerio; Abrahao, Rafaela Simao; De Souza Moreira, Fatima Maria; Furtini Neto, Antonio Eduardo (Dep. Cienc. Solo, Univ. Fed. Lavras, Lavras, 37200-000, Brazil). Revista Arvore, 24(3), 309-315 (Portuguese) 2000. CODEN: RARVDY. ISSN: 0100-6762. Publisher: Sociedade de Investigacoes Florestais.

AB The effect of aciary oven powder application on soil microbiota and growth of Eucalyptus grandis was studied under **greenhouse** conditions in a completely randomized design and a 2 + 4 factorial, using two types of soil (**Red-Yellow** Latosol LV and Dark-**Red** Latosol LE) and 4 levels of heavy metal residue (0; 0.75; 1.50 and 3.00 g per pot with 1.5 dm⁻³ of soil, corresponding to 0, 1, 2, and 4 t/ha), with 4 replicates. The soils were limed and fertilized before addition of the residue and transplant of the eucalypt seedlings. The experiment was conducted with 3 plants per pot and received 5 N fertilization of 18 mg N/kg, biweekly after transplanting. Ninety days after transplanting, the plants and soil samples of all the treatments were collected to determine the shoot and root dry matter, to make a semi-quant. evaluation of associative diazotrophs on soils, and to evaluate microbial activity, microbial biomass C and shoot concns. of heavy metals (Cd and Pb) and micronutrients (Cu, Fe, Mn and Zn). Thus, the impacts of the heavy metal residue varied according to the aciary oven powder levels used and the soil type. Increasing residue levels led to an increase in shoot concns. of Cu, Fe, Mn, Zn, Cd and Pb, without reaching values considered toxic to the culture at a calculated level of 2.6 t/ha for LE and 2.2 t/ha for the LV soil. At these levels, there was a decrease in microbial activity, an increase in C-microbial biomass in LE and no effect on the diazotrophs studied in both soils and on the C-microbial biomass in LV.

IT 7439-96-5, **Manganese**, biological studies
 7440-50-8, **Copper**, biological studies
 RL: BAC (Biological activity or effector, except adverse); BSU

(Biological study, unclassified); POL (Pollutant); BIOL (Biological study); OCCU (Occurrence)

(effect of heavy metals on soil microbiota and growth of eucalyptus)

RN 7439-96-5 HCA

CN Manganese (8CI, 9CI) (CA INDEX NAME)

Mn

RN 7440-50-8 HCA

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

CC 19-9 (Fertilizers, Soils, and Plant Nutrition)

IT 7439-89-6, Iron, biological studies 7439-92-1, Lead, biological studies 7439-96-5, Manganese, biological studies

7440-43-9, Cadmium, biological studies 7440-50-8,

Copper, biological studies 7440-66-6, Zinc, biological studies

RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); POL (Pollutant); BIOL (Biological study); OCCU (Occurrence)

(effect of heavy metals on soil microbiota and growth of eucalyptus)

L98 ANSWER 10 OF 44 HCA COPYRIGHT 2005 ACS on STN

134:232816 Effect of toxic metals on some medical plants. Masarovicova, E.; Kral'ova, K.; Sersen, F.; Bumbalova, A.; Lux, A. (Department of Plant Physiology, Faculty of Natural Sciences, Comenius University, Bratislava, SK-84215, Slovakia). Mengen- und Spurenelemente, Arbeitstagung, 19th, Jena, Germany, Dec. 3-4, 1999, 189-196. Editor(s): Anke, Manfred. Verlag Harald Schubert: Leipzig, Germany. (English) 1999. CODEN: 69ATUC.

AB The effect of toxic metal Cd on growth, plant biomass (root and shoot), and root dark respiration rate of Hypericum perforatum was studied. The plants treated with Cd respired faster than control plants. Studied species could accumulate larger amount of cd without reduction of the growth and biomass production Cadmium concentration in the root was 7-times higher than in the stem or leaves. The oxygen evolution rate (OER) in H. perforatum and Karwinskia humboldtiana chloroplasts was inhibited by the studied metals Cu, Hg and Ni. The toxicity of the metals for the both investigated medicinal plants decreased in following order Cu > Hg > Ni > Cd and the toxicity of copper was approx. 2.8 - 3.7 times higher than that of mercury and 99 - 205 times higher than that of nickel. In the presence of the metals studied, the intensity of the fluorescence emission band at 686 nm belonging to the chlorophyll a-protein complexes present mainly in photosystem 2 (PS 2) showed a linear decrease with increasing metal concentration, suggesting PS 2 as the site of action of

the investigated metals. Using EPR spectroscopy the site of Cd action in leaves of *H. perforatum* plant (grown in hydroponic solution containing 12 $\mu\text{mol dm}^{-3}$ Cd; pH = 5.5) was determined. It was found that Cd interacted with the intermediates Z+/D+ (i.e. with tyrosine radicals which are located in 161st position in D1 and D2 proteins situated on the donor side of PS 2), however the interaction with the intermediate Z+ was more intensive. The study of the metal accumulation in dried samples of *H. perforatum* chloroplasts showed that the amount of the accumulated metal strongly increases with increasing metal concentration applied at metal-treating. It was found that the binding of Hg to *H. perforatum* chloroplasts is the most pronounced, and it is approx. 3-4 times higher than the binding of Cu and Cd.

IT 7440-50-8, **Copper**, biological studies
 RL: ADV (Adverse effect, including toxicity); BIOL (Biological study)
 (toxicity of heavy metals on medical plants)

RN 7440-50-8 HCA
 CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

CC 4-3 (Toxicology)
 Section cross-reference(s): 11
 IT 7439-97-6, Mercury, biological studies 7440-02-0, Nickel, biological studies 7440-43-9, Cadmium, biological studies
7440-50-8, Copper, biological studies
 RL: ADV (Adverse effect, including toxicity); BIOL (Biological study)
 (toxicity of heavy metals on medical plants)

L98 ANSWER 11 OF 44 HCA COPYRIGHT 2005 ACS on STN
 134:71023 Effect of **Aluminum** Competition on Lead and Cadmium Binding to Humic Acids at Variable Ionic Strength. Pinheiro, J. P.; Mota, A. M.; Benedetti, M. F. (CMQA UCEH-A.D. Quimica, Universidade do Algarve Campus de Gambelas, Faro, 8000, Port.). Environmental Science and Technology, 34(24), 5137-5143 (English) 2000. CODEN: ESTHAG. ISSN: 0013-936X. Publisher: American Chemical Society.
 AB Complexation of Al³⁺ by NOM will change the speciation of **Al** and influence its toxicity. Competitive binding data between **Al** and metal ions to humic acids are needed to understand changes in speciation and mobility. One also needs to investigate the effect of changes in electrolyte concentration on the binding of **Al**, Pb and Cd to humic acid. Competition expts. were performed at various pH and electrolyte concns. using Cd and Pb ion selective electrodes to measure free metal ion concns. The effect of **aluminum** on the lead binding was important; it could reduce the amount of lead bound by a factor of 2 to 3. In the absence of **Al**, an increase of ionic strength also led to a reduction of Pb bound. For cadmium, similar results were obtained. The NICA-Donnan model was used to describe the **Al** and Pb binding to humic acids and to predict Pb-**Al** as well

as Cd-Al competition without parameter adjustment. With NICA-Donnan model, the authors calculated the speciation of the metal ions in the system and quantified the contribution of specific binding and electrostatic binding as pH, electrolyte and metal ion concns. changed during the expts. In a natural environment, Al competition will have an effect on Pb toxicity and on Cd transport.

IT 7429-90-5, Aluminum, reactions

RL: PEP (Physical, engineering or chemical process); RCT (Reactant);
PROC (Process); RACT (Reactant or reagent)
(lead and cadmium binding to humic acids response to
aluminum competition at variable ionic strength)

RN 7429-90-5 HCA

CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

CC 19-10 (Fertilizers, Soils, and Plant Nutrition)

Section cross-reference(s): 4, 61

ST aluminum competition cadmium lead binding humic acid

IT Complexation

Ionic strength

(aluminum competition effect on lead and cadmium
binding to humic acids at variable ionic strength)

IT Humic acids

RL: PEP (Physical, engineering or chemical process); RCT (Reactant);
PROC (Process); RACT (Reactant or reagent)

(aluminum competition effect on lead and cadmium
binding to humic acids at variable ionic strength)

IT Metal speciation

(aluminum competition effect on lead and cadmium
binding to humic acids at variable ionic strength in relation to)

IT 7439-92-1, Lead, reactions 7440-43-9, Cadmium, reactions

RL: PEP (Physical, engineering or chemical process); POL
(Pollutant); RCT (Reactant); OCCU (Occurrence); PROC (Process); RACT
(Reactant or reagent)

(aluminum competition effect on lead and cadmium
binding to humic acids at variable ionic strength)

IT 7429-90-5, Aluminum, reactions

RL: PEP (Physical, engineering or chemical process); RCT (Reactant);
PROC (Process); RACT (Reactant or reagent)

(lead and cadmium binding to humic acids response to
aluminum competition at variable ionic strength)

L98 ANSWER 12 OF 44 HCA COPYRIGHT 2005 ACS on STN

130:58898 Environmentally safe yellow bug light. Labant,
Cynthia J. (Osram-Sylvania Inc., USA). PCT Int. Appl. WO 9856031 A1
19981210, 13 pp. DESIGNATED STATES: W: CN, DE, HU. (English).
CODEN: PIXXD2. APPLICATION: WO 1998-IB1224 19980603. PRIORITY: US
1997-48449 19970603.

AB Yellow bug lamps are described which have a
cadmium-free coating which comprises sulfate precipitated

silica, aluminum silicate pigment, zirconium praseodymium yellow zircon, and nickel titanium yellow rutile. Preferably the light emitted has color coordinates of $x = 0.5341$ to 0.5406 and $y = 0.4400$ to 0.4378 .

IT 7440-10-0, Praseodymium, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(yellow zircon pigment containing; yellow bug lights with cadmium-free coatings)
RN 7440-10-0 HCA
CN Praseodymium (8CI, 9CI) (CA INDEX NAME)

Pr

IC ICM H01K001-32
ICS H01J061-40
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 5
ST cadmium free coating yellow bug light
IT Optical filters
(coatings; yellow bug lights with cadmium-free coatings)
IT Electric lamps
(incandescent, bug; yellow bug lights with cadmium-free coatings)
IT Pigments, nonbiological
(yellow bug lights with cadmium-free coatings)
IT 1335-30-4, Aluminum silicate 7631-86-9, Silica, uses
RL: DEV (Device component use); USES (Uses)
(coatings containing; yellow bug lights with cadmium-free coatings)
IT 7440-62-2, Vanadium, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(pigment containing; yellow bug lights with cadmium-free coatings)
IT 10101-52-7, Zirconium silicate
RL: DEV (Device component use); USES (Uses)
(praseodymium-containing; yellow bug lights with cadmium-free coatings)
IT 54576-53-3, Antimony nickel titanium oxide
RL: DEV (Device component use); USES (Uses)
(vanadium-doped, pigment containing; yellow bug lights with cadmium-free coatings)
IT 7440-10-0, Praseodymium, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(yellow zircon pigment containing; yellow bug lights with cadmium-free coatings)

L98 ANSWER 13 OF 44 HCA COPYRIGHT 2005 ACS on STN
 129:252029 Interfacial electron transfer from nonstoichiometric cadmium sulfide nanoparticles to free and complexed copper(II) ions in 2-propanol. Isarov, Alex V.; Chrysochoos, John (Department of Chemistry, The University of Toledo, Toledo, OH, 43606, USA). Proceedings - Indian Academy of Sciences, Chemical Sciences, 110(3), 277-295 (English) 1998. CODEN: PIAADM. ISSN: 0253-4134. Publisher: Indian Academy of Sciences.

AB The interactions of free and complexed Cu ions ($\text{Cu}(\text{ClO}_4)_2$, $\text{Cu}(\text{acac})_2$, and CuTPP) with the surface of nonstoichiometric CdS nanoparticles were monitored by EPR spectroscopy, recombination luminescence quenching and UV/visible absorption spectroscopy. Formation of a surface S-Cu bond takes place both in the case of $\text{Cu}(\text{ClO}_4)_2$ (free Cu^{2+} ions) and $\text{Cu}(\text{acac})_2$. This process is accompanied by thermal (dark) reduction of Cu^{2+} , formation of a new energy level in the semiconductor bandgap and quenching of the original recombination luminescence of the nanoparticles. The quenching data obey a static interaction model, which confirms binding of Cu ions onto the surface of CdS nanoparticles. $\text{Cu}(\text{acac})_2$ mols. can interact with Cd^{2+} ions on the surface of CdS, leading to a less effective quenching of the recombination luminescence of CdS, compared to that by free Cu ions. In contrast to the behavior of $\text{Cu}(\text{ClO}_4)_2$ and $\text{Cu}(\text{acac})_2$, Cu(II) tetraphenylporphyrin does not interact directly with the surface of CdS nanoparticles, leading to a very negligible quenching of the recombination luminescence of CdS(elr-/htr+) nanoparticles.

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 66, 76, 77

ST interfacial electron transfer cadmium sulfide nanoparticle; recombination luminescence quenching cadmium sulfide nanoparticle; UV visible cadmium sulfide nanoparticle; ESR cadmium sulfide nanoparticle; redn copper cadmium sulfide nanoparticle; band gap cadmium sulfide nanoparticle; acetylacetato copper bond cadmium sulfide nanoparticle; tetraphenylporphyrinato copper bond cadmium sulfide nanoparticle; copper complex bond cadmium sulfide nanoparticle

IT Interface
 (electron transfer; interfacial electron transfer from nonstoichiometric cadmium sulfide nanoparticles to free and complexed copper(II) ions in 2-propanol with recombination luminescence quenching)

IT Bond formation
 ESR (electron spin resonance)
 Nanoparticles
 Reduction
 UV and visible spectra
 (interfacial electron transfer from nonstoichiometric cadmium sulfide nanoparticles to free and

complexed **copper(II)** ions in 2-propanol with recombination **luminescence** quenching)

- IT Electron transfer
 (interfacial; interfacial electron transfer from nonstoichiometric **cadmium** sulfide nanoparticles to **free** and complexed **copper(II)** ions in 2-propanol with recombination **luminescence** quenching)
- IT Band gap
 (optical; interfacial electron transfer from nonstoichiometric **cadmium** sulfide nanoparticles to **free** and complexed **copper(II)** ions in 2-propanol with recombination **luminescence** quenching)
- IT Radiative recombination
 (quenching; interfacial electron transfer from nonstoichiometric **cadmium** sulfide nanoparticles to **free** and complexed **copper(II)** ions in 2-propanol with recombination **luminescence** quenching)
- IT Luminescence quenching
 (recombination; interfacial electron transfer from nonstoichiometric **cadmium** sulfide nanoparticles to **free** and complexed **copper(II)** ions in 2-propanol with recombination **luminescence** quenching)
- IT 1306-23-6, Cadmium sulfide, properties 13395-16-9,
Bis(acetylacetonato)copper 13770-18-8, **Copper bis(perchlorate)** 14172-91-9, (meso-Tetraphenylporphinato) **copper** 18496-25-8, Sulfide 22537-48-0, Cadmium 2+, properties
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
 (interfacial electron transfer from nonstoichiometric **cadmium** sulfide nanoparticles to **free** and complexed **copper(II)** ions in 2-propanol with recombination **luminescence** quenching)

L98 ANSWER 14 OF 44 HCA COPYRIGHT 2005 ACS on STN

129:101424 Effects of insulating layers on the performance of organic **electroluminescent** devices. Jabbour, Ghassan E.; Schlaf, Rudy; Armstrong, Neal R.; Kippelen, Bernard; Peyghambarian, Nasser (Optical Sciences Center, University of Arizona, Tucson, AZ, 85721, USA). Proceedings of SPIE-The International Society for Optical Engineering, 3281(Polymer Photonic Devices), 182-190 (English) 1998. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.

AB In this paper, we demonstrate the enhancement in the performance of organic **electroluminescent** devices upon the insertion of an insulating layer or layers of LiF in the device structure. Highly efficient and bright organic **light-emitting** devices were fabricated with this approach. External quantum efficiencies approaching 3% and light output exceeding 45,000 cd/m² were achieved for **green light-emitting** devices with Al cathode. This technique can be extended to fabricate efficient blue and sharp **red light-emitting** devices. In this respect, using Al as

the electron injecting electrode, blue **light-emitting** devices with external quantum efficiency of 1.4% and light output >4,000 cd/m² were achieved **without** the use of dopants. For sharp-**red** **light-emitting** devices, record efficiency and light output were obtained when LiF was used. Devices without the LiF layer showed light output levels <5 cd/m², whereas, with the insertion of LiF before the cathode, the external quantum efficiency exceeded 1% and light output was >320 cd/m². All of these devices had lower operational voltage than similar devices without the LiF layer. Preliminary UPS-XPS results revealed a sharp decrease in the work function of **aluminum** upon the deposition of sub-monolayer of LiF. Although, the use of the LiF layer on the indium-tin-oxide anode showed some enhancement in device performance, the contribution to device performance is lower than the case with the same insulator deposited at the cathode side, indicating that the cathode is more problematic than the hole injecting indium-tin-oxide electrode.

IT 7429-90-5, **Aluminum**, properties

RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (cathode; lithium fluoride insulating layers for high-performance organic **electroluminescent** devices and effect on work function)

RN 7429-90-5 HCA

CN Aluminum (8CI, 9CI) (CA INDEX NAME)

A1

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 76

ST lithium fluoride insulator org **electroluminescent** device

IT Anodes

Cathodes

Electric current-potential relationship

Electroluminescent devices

(lithium fluoride insulating layers for high-performance organic **electroluminescent** devices)

IT Work function

(of **aluminum** cathode in organic **electroluminescent** device and **reduction** due to lithium fluoride insulating layer)

IT 7429-90-5, **Aluminum**, properties

RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (cathode; lithium fluoride insulating layers for high-performance organic **electroluminescent** devices and effect on work function)

IT 7439-95-4, Magnesium, uses

RL: DEV (Device component use); USES (Uses)
 (cathode; lithium fluoride insulating layers for high-performance organic **electroluminescent** devices using)

IT 7789-24-4, Lithium fluoride (LiF), properties

- IT RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (insulating layers for high-performance organic
 electroluminescent devices)
- IT 50926-11-9, ITO
 RL: DEV (Device component use); USES (Uses)
 (lithium fluoride insulating layers for high-performance organic
 electroluminescent devices using)
- IT 1047-16-1, Quinacridone 2085-33-8, Tris(8-quinolinolato)
 aluminum 15082-28-7 17904-86-8 65181-78-4, TPD
 142289-08-5
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (lithium fluoride insulating layers for high-performance organic
 electroluminescent devices using)
- L98 ANSWER 15 OF 44 HCA COPYRIGHT 2005 ACS on STN.
 128:186027 Transient **electroluminescence** under short and
 strong voltage pulses. Chayet, Haim; Pogreb, Roman; Davidov, Dan
 (Racah Institute Physics, Hebrew University Jerusalem, 91904,
 Israel). Proceedings of SPIE-The International Society for Optical
 Engineering, 3148(Organic Light-Emitting Materials and Devices),
 34-44 (English) 1997. CODEN: PSISDG. ISSN: 0277-786X. Publisher:
 SPIE-The International Society for Optical Engineering.
- AB We present high voltage pulsed **electroluminescence** (
 EL) measurements on **light-emitting**
 diodes (**LED**) based on thin films of poly(p-
 phenylenevinylene) (PPV) sandwiched between ITO and **aluminum**
 electrodes. We observe two regimes in the **LED** operation
 depending on the driving pulsed c.d. At low current densities,
 below 50 A/cm², the pulsed **EL** follows its d.c.
 characteristics with **yellow-green** emission.
 Above some threshold c.d. we observe addnl. UV-violet emission
 (centered at 390 nm, ≈3.17 eV); the amplitude of the pulsed
 UV **EL** increases exponentially with the applied voltage.
 When the amplitude of the voltage pulses is around 300 V, the
 current signal exhibits a sharp current peak followed by a dramatic
 increase in UV **EL** intensity but only moderate increase of
 the **green** emission. We propose a possible explanation for
 the appearance of the UV emission upon application of strong elec.
 pulses. It is due, we believe, to "hot" carriers in strong fields
 which partially inhibit the formation fo singlet excitons and
 enhance the probability for direct inter-band radiative transitions.
 We show that our very simple device can be operated at c.d. as high
 as 140 A/cm² and achieve a peak brightness of 105 cd/m²
 without appreciable degradation
- IT 7429-90-5, Aluminum, uses
 RL: DEV (Device component use); USES (Uses)
 (transient **electroluminescence** under short and strong
 voltage pulses)
- RN 7429-90-5 HCA
- CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 74
 ST transient **electroluminescence LED**
 polyphenylenevinylene
 IT **Electroluminescent devices**
Exciton
 (transient **electroluminescence** under short and strong voltage pulses)
 IT Poly(arylenealkenylenes)
 RL: DEV (Device component use); USES (Uses)
 (transient **electroluminescence** under short and strong voltage pulses)
 IT Luminescence, **electroluminescence**
 (transient; transient **electroluminescence** under short and strong voltage pulses)
 IT 7429-90-5, Aluminum, uses 26009-24-5,
 Poly(p-phenylenevinylene) 50926-11-9, Indium tin oxide
 RL: DEV (Device component use); USES (Uses)
 (transient **electroluminescence** under short and strong voltage pulses)

L98 ANSWER 16 OF 44 HCA COPYRIGHT 2005 ACS on STN
 127:180007 Manufacture of metal-filled ceramic material, its electrode, and **display device** using the same. Kakuno, Yoshinori; Yamazaki, Fumio; Inoue, Isamu (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 09208332 A2 19970812 Heisei, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1996-13416 19960130.

AB A ceramic body has, on both sides, holes which do not pierce the body and holes which pierce the body; these non-piercing holes are filled with metal chips. The ceramic is manufactured by making the holes on **greens**, inserting a metal having m.p. higher than the sintering temperature of the **green** (T_s) and thermal expansion coefficient smaller than the ceramic, and firing. The **green** sheets having holes may be laminated. The electrode is obtained by laminating 2 pieces of the ceramic body soldered with an electrode on 1 side and irradiating with a beam to solder the filled metal and the electrode. The **display device** has an **electron source**, the electrode, and an **electroluminescent** means.

IC ICM C04B035-74
 ICS B23K026-00; H01J009-14
 CC 57-2 (Ceramics)
 Section cross-reference(s): 55, 56, 74
 ST metal filled ceramic electrode **display device**; molybdenum filled alumina ceramic electrode display
 IT Ceramics
 Electrodes
Electrooptical imaging devices
 (manufacture of metal-filled ceramic material, its electrode, and **display device** using the same)

IT 1309-48-4, Magnesia, uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 160375-03-1, **Aluminum magnesium silicon oxide**
 RL: DEV (Device component use); USES (Uses)
 (ceramics; manufacture of metal-filled ceramic material, its electrode, and **display device** using the same)

IT 39398-26-0, Chromium 6, iron 52, nickel 42
 RL: DEV (Device component use); USES (Uses)
 (electrode; manufacture of metal-filled ceramic material, its electrode, and **display device** using the same)

IT 7439-98-7, Molybdenum, uses
 RL: DEV (Device component use); USES (Uses)
 (manufacture of metal-filled ceramic material, its electrode, and **display device** using the same)

L98 ANSWER 17 OF 44 HCA COPYRIGHT 2005 ACS on STN
 127:154418 Manufacture of **green-emitting phosphor**
 for excitation by low-speed **electron beam**.
 Oshima, Hidenori (Noritake Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 09194834 A2 19970729 Heisei, 12 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1996-6397 19960118.

AB The manufacturing method involves a process of dispersing a **Mn** compound activator into ZnO·Ga2O3 in a reducing atmospheric at 800-1000°. The obtained **phosphor** may be annealed in an inactive atmospheric at 650-950° after the above process. The **phosphor** is useful for **fluorescent display tubes**. The **phosphor** shows high **luminance** at its initial emitting.

IT 7439-96-5, **Manganese**, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (doping of manganese into gallium zinc oxide phosphor by thermal reduction for high initial luminance)

RN 7439-96-5 HCA
 CN Manganese (8CI, 9CI) (CA INDEX NAME)

Mn

IT 12064-18-5P, **Gallium zinc oxide**
 (Ga2ZnO4)
 RL: DEV (Device component use); PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (doping of manganese into gallium zinc oxide phosphor by thermal reduction for high initial luminance)

RN 12064-18-5 HCA
 CN Gallium zinc oxide (Ga2ZnO4) (9CI) (CA INDEX NAME)

Component		Ratio		Component
				Registry Number

O		4		17778-80-2
Zn		1		7440-66-6
Ga		2		7440-55-3

IC ICM C09K011-62
ICS C09K011-08

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **zinc gallium oxide manganese**
activator phosphor; thermal redn zinc gallium
oxide phosphor; green emitting zinc gallium
oxide phosphor

IT Cathode ray tubes
Phosphors

(doping of manganese into gallium
zinc oxide phosphor by thermal
reduction for high initial luminance)

IT Reduction
(thermal; doping of manganese into
gallium zinc oxide phosphor
by thermal reduction for high initial luminance)

IT 7439-96-5, Manganese, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
(doping of manganese into gallium
zinc oxide phosphor by thermal
reduction for high initial luminance)

IT 12064-18-5P, Gallium zinc oxide
(Ga₂ZnO₄)
RL: DEV (Device component use); PNU (Preparation, unclassified); TEM
(Technical or engineered material use); PREP (Preparation); USES
(Uses)
(doping of manganese into gallium
zinc oxide phosphor by thermal
reduction for high initial luminance)

IT 7785-87-7, Manganese sulfate
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(doping of manganese into gallium
zinc oxide phosphor by thermal
reduction for high initial luminance)

L98 ANSWER 18 OF 44 HCA COPYRIGHT 2005 ACS on STN
127:150941 FT-PL analysis of CIGS/CdS/ZnO interfaces. Webb, John D.;
Keyes, Brian M.; Ramanathan, Kannan; Dippo, Patricia; Niles, David
W.; Noufi, Rommel (National Renewable Energy Laboratory, Golden, CO,
80401-3393, USA). AIP Conference Proceedings, 394(NREL/SNL
Photovoltaics Program Review, 1996), 573-578 (English) 1997. CODEN:
APCPCS. ISSN: 0094-243X. Publisher: AIP Press.

AB High-quality copper indium gallium diselenide (CIGS) films
were subjected to a variety of surface treatments, including
deposition of CdS and/or ZnO junctions or buffer layers. The
resulting devices were analyzed at 87 K using Fourier transform

photoluminescence (FT-PL) spectroscopy as part of a battery of anal. procedures, including surface anal., ellipsometry, and I-V measurements, designed to elucidate the influences of the several interfaces on device performance. Our FT-PL system was upgraded with a miniature Joule-Thomson cryostat and a helium-neon laser excitation source to enable collection of highly-resolved, continuous PL spectra from 950-1750 nm. The PL intensity enhancements measured with the upgraded FT-PL system for devices fabricated using chemical bath deposition (CBD) of **CdS**, with or **without** a ZnO electrode, are much greater than for devices incorporating phys. vapor deposited (PVD) CdS or ZnO/CIGS interfaces. Exposure of the CIGS films to components of the CBD solution alone, **without** deposition of **CdS**, also increases PL intensity, implying a **reduction** in the rate of non-radiative recombination in the films. Application of CBD CdS or a CBD background solution to the CIGS shifted its PL spectrum to shorter wavelengths, while application of PVD CdS or ZnO to the CIGS broadened its PL spectrum at longer wavelengths.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76

ST **copper** indium gallium diselenide solar cell; surface treatment solar cell junction buffer; cadmium sulfide deposition junction buffer layer; zinc oxide deposition junction buffer layer

IT Electron-hole recombination
Solar cells

(Fourier transform photoluminescence spectroscopy anal. of **copper** indium gallium diselenide/CdS/ZnO interfaces)

IT Luminescence spectroscopy
(Fourier transform; Fourier transform photoluminescence spectroscopy anal. of **copper** indium gallium diselenide/CdS/ZnO interfaces)

IT 1306-24-7, Cadmium selenide (CdSe), uses 1314-13-2, Zinc oxide, uses

RL: DEV (Device component use); USES (Uses)
(Fourier transform photoluminescence (FT-PL) spectroscopy anal. of **copper** indium gallium diselenide/CdS/ZnO interfaces)

IT 111419-77-3, **Copper** gallium indium selenide cugainse2

RL: DEV (Device component use); USES (Uses)
(Fourier transform photoluminescence spectroscopy anal. of **copper** indium gallium diselenide/CdS/ZnO interfaces)

L98 ANSWER 19 OF 44 HCA COPYRIGHT 2005 ACS on STN

124:40751 **Electroluminescent** properties of SrSe:Ce/**ZnS**

:**Mn** multilayered thin films with white light emission.

Nakanishi, Yoichiro; Takahashi, Masahiro; Hatanaka, Yoshinori (Elec. Eng. Coll., Shizuoka Univ., Japan). Shizuoka Daigaku Denshi Kogaku Kenkyusho Kenkyu Hokoku, 30(1), 47-54 (English) 1995. CODEN: SDDHDM. ISSN: 0286-3383. Publisher: Shizuoka Daigaku Denshi Kogaku Kenkyusho.

AB White-light-emitting SrSe:Ce/**ZnS**:**Mn** multilayered thin-film **electroluminescent** (EL) devices, in which SrSe:Ce shows blue emission with good chromaticity, were prepared in view of the development of full color EL display by using R, G and B

color filters. The SrSe:Ce and ZnS:Mn films were prepared by multi-source deposition and electron beam evaporation techniques, resp. Luminance of white EL of about 280 cd/M² was obtained by annealing the films at 400° for 1 h after the deposition of both SrSe:Ce and ZnS:Mn films. Red (R), green (G), and blue (B) emissions were obtained by filtering through R, G and B color filters. The device showed red and green emissions with nearly the same chromaticity as those of a CRT. Even though the chromaticity of blue emission was closer to CIE color coordinate of the standard CRT than that of SrSe:Ce thin-film EL device, the authors suggest that it need further improvement.

IT 7439-96-5, Manganese, properties
 RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); USES (Uses)

(activator; electroluminescent properties of multilayered thin films with white light emission)

RN 7439-96-5 HCA

CN Manganese (8CI, 9CI) (CA INDEX NAME)

Mn

IT 1314-98-3, Zinc sulfide, properties
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (electroluminescent properties of multilayered thin films with white light emission)

RN 1314-98-3 HCA

CN Zinc sulfide (Zns) (9CI) (CA INDEX NAME)

S==Zn

CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74, 76

ST display white emitting electroluminescent device

IT Electroluminescent devices

Luminescence, electro-

(electroluminescent properties of multilayered thin films with white light emission)

IT 7439-96-5, Manganese, properties 7440-45-1,

Cerium, properties

RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); USES (Uses)

(activator; electroluminescent properties of multilayered thin films with white light emission)

IT 1314-98-3, Zinc sulfide, properties

1315-07-7, Strontium selenide

RL: DEV (Device component use); PRP (Properties); USES (Uses)

(electroluminescent properties of multilayered thin films with white light emission)

L98 ANSWER 20 OF 44 HCA COPYRIGHT 2005 ACS on STN
 121:94937 Emission color tuning of **green** emitting **Zns**
 -based **CRT phosphors**. Bredol, M.; Merikhi, J.;
 Koehler, I.; Bechtel, H.; Czarnojan, W. (Philips
 Forschungslaboratorien/Aachen, Aachen, D-52021, Germany). Journal
 of Solid State Chemistry, 110(2), 250-5 (English) 1994. CODEN:
 JSSCBI. ISSN: 0022-4596.

AB **ZnS:Cu,Au,Al; Zns:**
Cu,Al and **(Zn,Cd)S:Cu**
,Al are the most important **green** emitting
phosphors for cathode ray tube
 applications. The latter one contains (toxic) cadmium and therefore
 tends to be eliminated from tube production whenever possible. Alloying
 with CdS is applied to control the emission color over a very large
 range. This work shows how the emission color of the **Cd-**
free phosphors can be tuned as well, at least over
 the region of interest for the **green** primary of color TV.
 Tuning mechanisms control the stoichiometry in the case of
ZnS:Cu,Au,Al and proper
 adjustment of the doping levels in the case of **Zns:**
Cu,Al. Relations for the emission color are
 given; possible microscopic mechanisms are discussed.

IT 1314-98-3, Zinc sulfide, uses
 RL: USES (Uses)
 (phosphors based on, emission color tuning of
 green emitting)

RN 1314-98-3 HCA

CN Zinc sulfide (Zns) (9CI) (CA INDEX NAME)

S==Zn

IT 7429-90-5, Aluminum, uses 7440-50-8,
Copper, uses 7440-57-5, Gold, uses
 RL: USES (Uses)
 (phosphors from zinc sulfide
 doped with, emission color tuning of **green**
 emitting)

RN 7429-90-5 HCA

CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

RN 7440-50-8. HCA
 CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

RN 7440-57-5 HCA
 CN Gold (8CI, 9CI) (CA INDEX NAME)

Au

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 ST emission color tuning **zinc sulfide**
phosphor
 IT **Luminescence**
 (of **zinc sulfide doped with**
 aluminum and copper and gold)
 IT **Phosphors**
 (zinc sulfide-based, emission color tuning of
 green emitting)
 IT 1314-98-3, **Zinc sulfide**, uses
 RL: USES (Uses)
 (phosphors based on, emission color tuning of
 green emitting)
 IT 7429-90-5, **Aluminum**, uses 7440-50-8,
Copper, uses 7440-57-5, **Gold**, uses
 RL: USES (Uses)
 (phosphors from **zinc sulfide**
 doped with, emission color tuning of **green**
 emitting)

L98 ANSWER 21 OF 44 HCA COPYRIGHT 2005 ACS on STN
 118:69299 Defect chemistry and **luminescence** of
aluminum-, gold-, and copper-
doped zinc sulfide. Bredol, M.;
 Merikhi, J.; Ronda, C. (Forschungslab., Philips GmbH, Aachen,
 D-5100, Germany). Berichte der Bunsen-Gesellschaft, 96(11), 1770-4
 (English) 1992. CODEN: BBPCAX. ISSN: 0005-9021.

AB Present high quality **CRT** TV sets employ wurtzite-(
Zn,Cd)S:Cu,Al phosphor
 or its **Cd-free** variant sphalerite-**ZnS**:
Cu,Au,Al to generate the **green**
 primary color. If prepared properly, both **phosphors** exhibit
 the desired emission properties. However, the **Au**-codoped
 material tends to large variations of the emission as a function of
 the preparation procedure and thus is more demanding in terms of precise
 control of the manufacturing process. This work aims at a better
 understanding of these peculiarities. Expts. are presented which
 demonstrate the large influence of the defect chemical of the
ZnS-host on the **Au**-related emission, whereas the
Cu-related emission is affected to a lesser extent.
 Possible techniques for a fine-tuning of the emission spectrum are
 discussed and evaluated according to the requirements of screen
 manufacture

IT 1314-98-3, **Zinc sulfide**, properties
 RL: PRP (Properties)
 (defect chemical and **luminescence** of **aluminum-**
 copper-gold-doped)

RN 1314-98-3 HCA

CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S==Zn

IT 7429-90-5, Aluminum, properties 7440-50-8
, Copper, properties 7440-57-5, Gold,
properties
RL: PRP (Properties)
(defect chemical and luminescence of zinc
sulfide cool-doped with)

RN 7429-90-5 HCA

CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

RN 7440-50-8 HCA

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

RN 7440-57-5 HCA

CN Gold (8CI, 9CI) (CA INDEX NAME)

Au

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related
Properties)

ST doped zinc sulfide defect chem
luminescence; aluminum zinc
sulfide defect chem luminescence; gold
zinc sulfide defect chem luminescence;
copper zinc sulfide defect chem
luminescence

IT Phosphors
(aluminum-copper-gold-doped
zinc sulfide)

IT Luminescence
(of aluminum-copper-gold-
doped zinc sulfide)

IT 1314-98-3, Zinc sulfide, properties
RL: PRP (Properties)
(defect chemical and luminescence of aluminum-
copper-gold-doped)

IT 7429-90-5, Aluminum, properties 7440-50-8
, Copper, properties 7440-57-5, Gold,
properties
RL: PRP (Properties)
(defect chemical and luminescence of zinc
sulfide cool-doped with)

L98 ANSWER 22 OF 44 HCA COPYRIGHT 2005 ACS on STN
 117:126072 Mercury(2+) and **copper**(2+) are ionophores, mediating chloride/hydroxide exchange in liposomes and rabbit renal brush border membranes. Karniski, Lawrence P. (Dep. Intern. Med., Veterans Aff. Med. Cent., Iowa City, IA, 52242, USA). Journal of Biological Chemistry, 267(27), 19218-25 (English) 1992. CODEN: JBCHA3. ISSN: 0021-9258.

AB The ability of inorg. metals to catalyze Cl-/OH- exchange was examined. In the presence of an inwardly directed chloride gradient, HgCl₂ at concns. \geq 30 nM resulted in the quenching of acridine **orange fluorescence** in liposomes, indicating liposomal acidification. In the presence of the reducing agent, ascorbate, CuSO₄ at concns. \geq 0.6 μ M also mediated chloride-dependent liposomal acidification. **Copper** in the absence of ascorbate, iron (with or **without** ascorbate), cobalt, **cadmium**, zinc, nickel, and lead were without an effect. ³⁶Cl efflux from rabbit renal brush border membrane vesicles was also markedly stimulated by micromolar concns. of mercury or **copper** plus ascorbate. Vesicle integrity was not altered by the concns. of mercury or **copper** employed in these studies. In the absence of ascorbate, CuCl stimulated chloride efflux only under anaerobic conditions, confirming that it is the reduced form of **copper** (Cu⁺) that mediates chloride transport across the membrane. In the presence of mercury or reduced **copper**, an inside alkaline pH gradient stimulated the uphill accumulation of ³⁶Cl and ⁸²Br, resp., confirming Cl-/OH- exchange. Studies in liposomes and brush border membranes demonstrate that this is an electroneutral process. Thus, Hg²⁺ and Cu⁺ are capable of acting as ionophores, mediating electroneutral Cl-/OH- exchange in liposomes and brush border membrane vesicles. This effect could contribute to the toxicity of these 2 metals.

IT 7440-50-8, **Copper**, biological studies

RL: BIOL (Biological study)

(chloride-hydroxide exchange in liposomes and renal brush border membranes mediation by, mercury compared to)

RN 7440-50-8 HCA

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

CC 4-3 (Toxicology)

ST chloride hydroxide exchange mercury **copper**; metal chloride hydroxide exchange. liposome kidney; brush border membrane chloride flux metal

IT Kidney, metabolism

(chloride-hydroxide exchange in brush border membrane vesicles of, **copper** and mercury mediation of)

IT Brush border

(chloride-hydroxide exchange in membrane vesicles of renal, **copper** and mercury mediation of)

- IT Liposome
(chloride-hydroxide exchange in, **copper** and mercury mediation of)
- IT Ionophores
(**copper** and mercury as, chloride-hydroxide exchange in liposomes and renal brush border membranes in relation to)
- IT Biological transport
(of chloride, in renal brush border membrane vesicles, **copper** and mercury induction of, dosage and pH in relation to)
- IT 7439-97-6, Mercury, biological studies
RL: BIOL (Biological study)
(chloride-hydroxide exchange in liposomes and renal brush border membranes mediation by, **copper** compared to)
- IT 7440-50-8, Copper, biological studies
RL: BIOL (Biological study)
(chloride-hydroxide exchange in liposomes and renal brush border membranes mediation by, mercury compared to)
- IT 14280-30-9, Hydroxide, biological studies
RL: BIOL (Biological study)
(exchange of, with chloride, in liposomes and renal brush border membranes, **copper** and mercury mediation of)
- IT 16887-00-6, Chloride, biological studies
RL: BIOL (Biological study)
(exchange of, with hydroxide, in liposomes and renal brush border membranes, **copper** and mercury mediation of)

L98 ANSWER 23 OF 44 HCA COPYRIGHT 2005 ACS on STN

113:240961 Application studies on **red-light emitting zinc sulfide-cadmium sulfide**
and europium-activated yttrium oxide sulfide (Y₂O₃:Eu³⁺)
phosphors used in cathode-ray tube screens for television.

Abdel-Kader, A.; Elkholly, M. M. (Fac. Sci., Menoufia Univ., Menoufia, Egypt). Journal of Materials Science: Materials in Electronics, 1(2), 95-9 (English) 1990. CODEN: JSMEEV. ISSN: 0957-4522.

AB The (Zn_{0.27}Cd_{0.73})S:Ag,Cl, (Zn_{0.77}Cd_{0.23})S:**Cu,Cl** and Y₂O₃:Eu³⁺ **red-light emitting phosphors** were used in the preparation of **cathode-ray tube screens for television**. The dependence of screen brightness on both **electron-beam** accelerating voltage and current densities was studied. The theor. calculated intrinsic efficiencies were compared with the exptl. efficiencies. The chromaticity of the **cathode-ray tube screens** was also studied as a function of accelerating high tension and c.d. Cathodoluminescence emission spectra for these **phosphors** at room temperature are also measured.

IT 7440-50-8, Copper, uses and miscellaneous
RL: USES (Uses)
(cathodoluminescent **phosphors** from cadmium **zinc sulfide** doped with, for **cathode ray**

tubes)

RN 7440-50-8 HCA
 CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST cathode tube screen red
 emitting phosphor; cadmium zinc sulfide
 phosphor television; yttrium oxysulfide europium
 phosphor television

IT Phosphors
 (cadmium zinc sulfide and yttrium oxysulfide)

IT Luminescence, cathodo-
 (of europium-doped yttrium oxysulfide and copper- and
 silver-doped cadmium zinc sulfide)

IT Phosphors
 (cathodoluminescent, from cadmium zinc sulfide
 and yttrium oxysulfide)

IT 126668-33-5, Cadmium zinc sulfide
 (Cd0.23Zn0.77S) 126668-34-6, Cadmium zinc
 sulfide (Cd0.73Zn0.27S)

RL: PRP (Properties)
 (cathodoluminescent phosphors containing, for
 cathode ray tubes)

IT 7440-22-4, Silver, uses and miscellaneous 7440-50-8,
 Copper, uses and miscellaneous 7782-50-5, Chlorine, uses
 and miscellaneous

RL: USES (Uses)
 (cathodoluminescent phosphors from cadmium zinc
 sulfide doped with, for cathode ray
 tubes)

IT 12340-04-4, Yttriumoxy sulfide (Y2O2S)

RL: PRP (Properties)
 (cathodoluminescent phosphors from europium-containing, for
 cathode ray tube screens)

IT 22541-18-0, Europium(3+), uses and miscellaneous

RL: USES (Uses)
 (cathodoluminescent phosphors from yttrium oxysulfide
 containing, for cathode-ray tube
 screens)

L98 ANSWER 24 OF 44 HCA COPYRIGHT 2005 ACS on STN

113:200989 Rare earth metal oxide-based phosphors. Yoshino, Masahiko;
 Chokai, Koichi (Kasei Optonix, Ltd., Japan). Jpn. Kokai Tokkyo Koho
 JP 02099586 A2 19900411 Heisei, 4 pp. (Japanese). CODEN: JKXXAF.
 APPLICATION: JP 1988-252364 19881006.

AB A phosphor, useful as a red-emitting phosphor for
 electroluminescent lamps and cathode-ray
 tubes, comprises an Eu-activated rare earth metal oxide
 containing 5-3000 ppm Au and/or Ag. (Y0.962, Eu0.038)203

phosphor containing 40 ppm **Au** had higher **electron beam** luminance and UV-ray luminance than that without **Au**.

IT 7440-57-5, **Gold**, uses and miscellaneous

RL: USES (Uses)

(phosphors based on europium-activated rare earth oxides containing, **red-emitting**, for **electroluminescent** lamps and **cathode-ray tubes**)

RN 7440-57-5 HCA

CN Gold (8CI, 9CI) (CA INDEX NAME)

Au

IC ICM C09K011-78

ICS C09K011-80

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST europium rare earth oxide phosphor; **electroluminescent lamp phosphor**; **cathode ray tube phosphor**; rare earth oxide phosphor **gold silver**; **red phosphor**

IT Phosphors

(**red-emitting**, rare earth oxides activated with europium and containing **gold** and **silver**)

IT 7440-22-4, **Silver**, uses and miscellaneous 7440-53-1, **Europium**, uses and miscellaneous 7440-57-5, **Gold**, uses and miscellaneous

RL: USES (Uses)

(phosphors based on europium-activated rare earth oxides containing, **red-emitting**, for **electroluminescent** lamps and **cathode-ray tubes**)

IT 128715-56-0, **Europium yttrium oxide** (Eu0.08Y1.92O3) 130154-13-1, **Europium gadolinium yttrium oxide** (Eu0.09GdY0.91O3)

RL: PRP (Properties)

(phosphors based on silver- and **gold**-containing, **red-emitting**, for **electroluminescent** lamps and **cathode-ray tubes**)

L98 ANSWER 25 OF 44 HCA COPYRIGHT 2005 ACS on STN

113:162185 Methods for producing **cadmium-free green-emitting phosphors** for **cathode-ray tubes**. Borchardt, Richard R.; Gingerich, Richard G. W.; Miller, Michael J. (GTE Products Corp., USA). U.S. US 4925593 A 19900515, 3 pp. (English). CODEN: USXXAM.

APPLICATION: US 1989-303599 19890127.

AB Methods for producing **Al-** and **Cu-activated**

ZnS phosphors are described which entail: forming a mixture of essentially pure **ZnS** and **ZnS** containing Cl- 0.075-2 weight% and other impurities \leq 0.5 weight%, an **Al** source material, a **Cu** source material, and an alkali metal flux; firing the mixture at 1775-1825° for .gtorsim.3 h under N₂ and CS₂, washing with water, and drying.

IT 1314-98-3, Zinc sulfide, uses and
miscellaneous

RL: USES (Uses)

(phosphors based on aluminum- and
copper-activated, cadmium-free
green-emitting, for cathode ray
tubes)

RN 1314-98-3 HCA

CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S== Zn

IT 7440-50-8, Copper, uses and miscellaneous

RL: USES (Uses)

(phosphors based on zinc sulfide
activated by aluminum and, cadmium-
free green-emitting, for cathode-
ray tubes)

RN 7440-50-8 HCA

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT 7429-90-5, Aluminum, uses and miscellaneous

RL: USES (Uses)

(phosphors based on zinc sulfide
activated by copper and, cadmium-free
green-emitting, for cathode-ray
tubes)

RN 7429-90-5 HCA

CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

IC ICM C09K011-56

NCL 252301600S

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST zinc sulfide aluminum copper
phosphor prepn; cadmium free
green phosphor prepn; cathode
ray tube phosphor prepn

IT Controlled atmospheres

(for cadmium-free zinc
sulfide phosphor preparation)

IT Phosphors

(green-emitting, cathodoluminescent, zinc
sulfide activated by aluminum and
copper, preparation of)

IT 7727-37-9, Nitrogen, uses and miscellaneous

- RL: PRP (Properties)
 (atmospheres containing carbon disulfide and, in **cadmium-free zinc sulfide phosphor**
 preparation)
- IT 75-15-0, Carbon disulfide, uses and miscellaneous
 RL: PRP (Properties)
 (atmospheres containing nitrogen and, in **cadmium-free zinc sulfide phosphor**
 preparation)
- IT 7446-70-0, **Aluminum chloride**, uses and miscellaneous
 7647-14-5, Sodium chloride, uses and miscellaneous 7758-98-7,
Copper sulfate, uses and miscellaneous
 RL: PRP (Properties)
 (in **cadmium-free zinc sulfide phosphor** preparation)
- IT 1314-98-3, Zinc sulfide, uses and
 miscellaneous
 RL: USES (Uses)
 (**phosphors** based on aluminum- and
 copper-activated, **cadmium-free**
 green-emitting, for cathode ray
 tubes)
- IT 7440-50-8, Copper, uses and miscellaneous
 RL: USES (Uses)
 (**phosphors** based on zinc sulfide
 activated by aluminum and, **cadmium-free**
 green-emitting, for cathode-ray
 tubes)
- IT 7429-90-5, Aluminum, uses and miscellaneous
 RL: USES (Uses)
 (**phosphors** based on zinc sulfide
 activated by copper and, **cadmium-free**
 green-emitting, for cathode-ray
 tubes)

L98 ANSWER 26 OF 44 HCA COPYRIGHT 2005 ACS on STN
 106:1926 Sequence-dependence of the CD of synthetic double-stranded RNAs
 containing inosinate instead of guanylate subunits. Ratliff, Robert
 L.; Liu, Jung Jen; Vaughan, Marilyn R.; Gray, Donald M. (Life Sci.
 Div., Los Alamos Natl. Lab., Los Alamos, NM, 87545, USA).
Biopolymers, 25(9), 1735-50 (English) 1986. CODEN: BIPMAA. ISSN:
 0006-3525.

AB The CD spectra and melting profiles were measured for 9 synthetic
 double-stranded RNAs containing I-C instead of G-C base pairs:
 poly[r(I)·r(C)], poly[r(I-C)·r(I-C)],
 poly[r(A-I-C)·r(I-C-U)], poly[r(A-C)·r(I-U)],
 poly[r(A-I)·r(C-U)], poly[r(A-C-C)·r(I-I-U)],
 poly[r(A-A-C)·r(I-U-U)], poly[r(A-C-U)·r(A-I-U)], and
 poly[r(A-U-C)·r(I-A-U)]. CD spectra have not previously been
 reported for the latter 6 of these polymers. The substitution of
 inosinate (I) for guanylate (G) led to recognizable CD
 differences, with all but 2 of the polymers having 2 resolved pos.
 bands at >230 nm. Also, the I-containing RNAs differed from their

G-containing counterparts in the almost complete absence of neg. CD bands at long wavelengths and in the redn of neg. CD bands near 210 nm. First-neighbor comparisons showed that the CD spectra of the I-containing RNAs were consistent with the nearest-neighbor sequences of the polymers, as previously shown for G-containing RNAs (Gray, D. M. et al., 1981). Moreover, 2 of the 1st-neighbor comparisons involved spectra of poly[(A)·r(U)] and poly[(I)·r(C)], polymers known to be in the A family of conformations in fibers. Thus, differences in the CD spectra of I- and G-containing RNAs could be simply explained as resulting from differences in the hypoxanthine and guanine chromophores, without invoking differences in conformation. Finally, melting temps. of the I-containing RNAs were found to vary much less with base composition than do the melting temps. of G-containing RNAs, since A-U base pairs are closer to I-C than to G-C base pairs in stability.

CC 6-2 (General Biochemistry)
Section cross-reference(s): 73

L98 ANSWER 27 OF 44 HCA COPYRIGHT 2005 ACS on STN

102:36429 Color cathode-ray tube. (Kasei
Optonix, Ltd., Japan; Sony Corp.). Jpn. Kokai Tokkyo Koho JP
59136379 A2 19840804 Showa, 10 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 1983-10114 19830125.

AB A color cathode-ray tube contains a rare-earth red phosphor (e.g., (Y, Eu)202S), a green phosphor (e.g., ZnS:Cu, Al), and a blue phosphor (e.g., ZnS:Ag) which when irradiated with an electron beam forms a color image. The red phosphor contains an addnl. phosphor ($M_{1-x-y}EuxCey$) $202S$, where $M = Y, Gd, La$, and/or Lu, to increase the uniformity of the image. The exact composition and mixture ratio are given in detail.

IT 1314-98-3, uses and miscellaneous

RL: USES (Uses)
(phosphor from metal-doped, for cathode-ray tube)

RN 1314-98-3 HCA

CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S==Zn

IT 7429-90-5, uses and miscellaneous 7440-50-8, uses and miscellaneous

RL: USES (Uses)
(zinc sulfide doped with, phosphor, for color cathode-ray tube)

RN 7429-90-5 HCA

CN Aluminum (8CI, 9CI) (CA INDEX NAME)

A1

RN 7440-50-8 HCA
 CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IC C09K011-477; H01J029-20
 CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 ST rare earth oxide sulfide **phosphor**; **cathode-ray tube phosphor** color
 IT **Phosphors**
 (for color **cathode-ray tubes**)
 IT 1314-98-3, uses and miscellaneous
 RL: USES (Uses)
 (**phosphor** from metal-doped, for **cathode-ray tube**)
 IT 12031-43-5 12163-19-8 12339-07-0 12340-04-4
 RL: PRP (Properties)
 (**phosphor** from metal-doped, for color **cathode-ray tube**)
 IT 7440-45-1, uses and miscellaneous 7440-53-1, uses and
 RL: USES (Uses)
 (yttrium oxide sulfide doped with, **phosphor**, for color
 cathode-ray tube)
 IT 7429-90-5, uses and miscellaneous 7440-22-4, uses and
 RL: USES (Uses)
 (zinc sulfide doped with,
 phosphor, for color **cathode-ray tube**)

L98 ANSWER 28 OF 44 HCA COPYRIGHT 2005 ACS on STN
 94:55948 **Fluorescent** display tube. (Nippon Electric Co., Ltd.,
 Japan). Jpn. Kokai Tokkyo Koho JP 55086869 19800701 Showa, 5 pp.
 (Japanese). CODEN: JKXXAF. APPLICATION: JP 1978-163837 19781222.

AB A **fluorescent** display tube **emitting red**
 light by low-energy **electron beam**
 excitation is comprised of a **light-emitting**
 layer containing a mixture of a conductive material based on stannic oxide
 and a **red fluorescent** material of M2O3 (M = B,
 Al, Ga, In) doped with Cr2O3. The **light-emitting**
 layer is coated on a transparent glass plate as the
 anode, disposed opposite to a cathode filament, and sealed
 in a **vacuum** vessel to give the display tube.

IC C09K011-38; H01J031-15
 CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic
 Processes)

ST Section cross-reference(s): 73, 76
 metal oxide **fluorescent** display tube; chromium metal oxide
electroluminescent display

IT **Phosphors**
 (chromium oxide-doped metal oxides as **red light-emitting**, for electrooptical **display devices**)

IT Oxides, uses and miscellaneous
 RL: USES (Uses)
 (chromium oxide-doped, **red light-emitting phosphors** from, for electrooptical **display devices**)

IT Optical display devices
 (electro-, **red light-emitting**
 layers containing stannic oxide and chromium oxide-doped metal oxide **phosphors** for)

IT 18282-10-5
 RL: USES (Uses)
 (**red light-emitting** layers containing
 chromium oxide-doped metal oxide **phosphors** and, for
 electrooptical **display devices**)

IT 1303-86-2, uses and miscellaneous 1312-43-2 1344-28-1, uses and
 miscellaneous 12024-21-4
 RL: USES (Uses)
 (**red light-emitting** layers containing
 stannic oxide and chromium oxide-doped, for electrooptical
display devices)

IT 1308-38-9, uses and miscellaneous
 RL: USES (Uses)
 (**red light-emitting**
phosphors from metal oxides doped with, for
 electrooptical **display devices**)

L98 ANSWER 29 OF 44 HCA COPYRIGHT 2005 ACS on STN
 93:248289 **Fluorescent** display tube. (Nippon Electric Co.,
 Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 55092787 19800714 Showa, 5
 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1979-812 19790105.

AB **Fluorescent** display tubes capable of displaying in
 brilliant **red** color with low-energy **electron-beam** excitation use a conductive material based on SnO₂ and
 a sp. amount of a Ag-activated **fluorescent** substance. Thus,
 a **fluorescent** display tube capable of producing a
 brilliant **red** display was prepared by coating the
 anode of a **vacuum** tube with a mixture containing
 $Zn_{1-x}Cd_xS:Ag$ ($0.6 \leq x \leq 0.9$) (10-5 .apprx. 5 +
 10-2 g Ag per 1 g $Zn_{1-x}Cd_xS$) 1 and a SnO₂-based **fluorescent**
 substance 14-1/14 parts.

IT 1314-98-3D, solid solns. with cadmium sulfide
 RL: USES (Uses)
 (silver-doped, **fluorescent** display tubes containing, for
 optical **display devices**)

RN 1314-98-3 HCA
 CN Zinc sulfide (Zns) (9CI) (CA INDEX NAME)

S==Zn

IC C09K011-34; H01J029-20
 CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic Processes)
 Section cross-reference(s): 73, 76
 ST fluorescent display tube; stannic oxide
 fluorescent display tube; tin oxide fluorescent
 display tube; zinc cadmium sulfide fluorescent display;
 cadmium zinc sulfide fluorescent
 display; sulfide cadmium zinc fluorescent display
 IT Optical display devices
 (electro-, fluorescent display tubes for,
 containing stannic oxide-based conductive composition and silver-doped
 zinc cadmium sulfide fluorescent material)
 IT 18282-10-5
 RL: USES (Uses)
 (fluorescent display tubes with conductive composition
 containing, for optical display devices)
 IT 1306-23-6D, solid solns. with zinc sulfide
1314-98-3D, solid solns. with cadmium sulfide
 RL: USES (Uses)
 (silver-doped, fluorescent display tubes containing, for
 optical display devices)
 IT 7440-22-4, uses and miscellaneous
 RL: USES (Uses)
 (zinc cadmium sulfide doped with, fluorescent tubes
 containing, for optical display devices)

L98 ANSWER 30 OF 44 HCA COPYRIGHT 2005 ACS on STN
 92:14471 **Phosphor.** Murakami, Katsuo; Anzai, Yoshinori; Ito,
 Hiroshi (Mitsubishi Electric Corp., Japan). Jpn. Kokai Tokkyo Koho
 JP 54101787 19790810 Showa, 5 pp. (Japanese). CODEN: JKXXAF.
 APPLICATION: JP 1978-9043 19780130.

AB The phosphors are m(Sr_{1-x-y-z}-pBa_xCa_yM_zEu_pO). (1-n)P₂O₅.nB₂O₃ (M = ≥1 of Be, Mg, Zn, Cd, and Mn, 0 ≤ x ≤ 0.5, 0 ≤ y ≤ 0.2, 0 < z ≤ 0.05, 0.001 ≤ p ≤ 0.15, 1.75 ≤ m ≤ 2.30, 0.05 ≤ n ≤ 0.23). Blue-green emission intensity on excitation by UV or cathode rays is stronger than that without partial substitution of alkaline-earth metal(s) by ≥1 of Be, etc., and the phosphor exhibits long service life in Hg lamps. Thus, SrHPO₄ 30.84, SrCO₃ 3.542, H₂B₂O₃ 1.979, Eu₂O₃ 0.704, and CdCO₃ 0.690 g were mixed, heated at 1140° for 2 h in a 20:1 N-H stream, cooled, powdered, and screened. The emission intensity of the phosphor (M = Cd, x,y = 0, z,p = 0.02, m = 2, n = 0.16) on excitation at 254 nm was stronger by 5% than one without Cd.

IC C09K011-96
 CC 76-7 (Electric Phenomena)
 ST phosphor alk earth borophosphate; strontium borophosphate

phosphor; barium borophosphate phosphor; calcium borophosphate phosphor; europium activated borophosphate phosphor; cadmium borophosphate phosphor
 IT Phosphors
 (alkaline-earth borophosphates, activated with europium)
 IT 1308-96-9
 RL: USES (Uses)
 (phosphors of alkaline-earth borophosphates activated with)
 IT 513-78-0 1633-05-2 10043-35-3, uses and miscellaneous
 13450-99-2
 RL: USES (Uses)
 (phosphors of alkaline-earth borophosphates from)

L98 ANSWER 31 OF 44 HCA COPYRIGHT 2005 ACS on STN

87:94416 Cadmium-free green emitting cathodoluminescent phosphor. Minnier, Henry B.; Layman, H. David (GTE Sylvania, Inc., USA). U.S. US 4038205 19770726, 7 pp. (English). CODEN: USXXAM. APPLICATION: US 1976-702624 19760706.

AB The production of a green-emitting cathodoluminescent phosphor consisting of ZnS activated by 10-200 ppm Cu, coactivated by 20-600 ppm Al, and containing <50 ppm halogen, characterized by a cathodoluminescent emission having x and y coordinate values within the range of 0.250-0.280 and 0.560-0.6150, resp., is described. A powder mixture of ZnS, a Cu compound, and an Al compound is fired at 950-1010° for .apprx.1 min to 2 h in a nonoxidizing atmospheric, preferably in the presence of activated C. The phosphor is cooled at a rate of .apprx.2-30°/min to 760-870° in a nonoxidizing atmospheric. Further cooling proceeds at a rate of ≥50°/min to a temperature ≤40°. The phosphor can be used in tri-dot color cathode-ray tubes.

IT 7429-90-5, uses and miscellaneous 7440-50-8, uses and miscellaneous
 RL: USES (Uses)
 (phosphors from zinc sulfide containing, green-emitting, for color-television tubes)

RN 7429-90-5 HCA
 CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

RN 7440-50-8 HCA
 CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT 1314-98-3, uses and miscellaneous
 RL: USES (Uses)
 (phosphors, green-emitting, for color-

television tubes)

RN 1314-98-3 HCA
 CN Zinc sulfide (Zns) (9CI) (CA INDEX NAME)

S==Zn

IC C09K011-30
 NCL 252301600S
 CC 76-7 (Electric Phenomena)
 Section cross-reference(s): 73
 ST zinc sulfide cathodoluminescent green;
 phosphor green zinc sulfide;
 television green phosphor
 IT Phosphors
 (zinc sulfide green-emitting
 cathodoluminescent, for color-television tubes
)
 IT 7429-90-5, uses and miscellaneous 7440-50-8, uses
 and miscellaneous
 RL: USES (Uses)
 (phosphors from zinc sulfide
 containing, green-emitting, for color-television
 tubes)
 IT 1314-98-3, uses and miscellaneous
 RL: USES (Uses)
 (phosphors, green-emitting, for color-
 television tubes)

L98 ANSWER 32 OF 44 HCA COPYRIGHT 2005 ACS on STN
 86:164299 Low-speed electron excitation and red-
 fluorescent indicator tube. Kagami, Akiyasu; Mimura,
 Yoshiyuki; Narita, Kinchiro; Hase, Takashi; Hiraki, Minoru (Dai
 Nippon Toryo Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 52006383
 19770118 Showa, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP
 1975-81947 19750704.

AB An anode plate coated on one side with a mixture of
 photoconductive CdS with at least one of fluorescent
 Y2O2S:Eu, Y2O3:Eu, and YVO4:Eu in a 1:4 to 7:3 ratio and a cathode
 are sealed in a vacuum tube. Thus, CdS:Cu 10-4
 and Y2O2S:Eu 5 + 10-2 g/g were mixed in a 1:1 ratio in a
 mortar, and 100 mg was suspended in 0.01% Na2SiO3 100 mL and
 precipitation-painted on a Al plate 1 + 2 cm on a ceramic
 plate (to 5 mg/cm²). When this system was sealed along with a
 oxide-coated W wire at 5-mm distance in a hard glass tube at 10-5
 torr, the fluorescence intensity was 2.0 foot-lambert at
 80 V anode plate potential and 0.6 V cathode potential and
 40 mA current.
 IT 7440-50-8, uses and miscellaneous
 RL: DEV (Device component use); USES (Uses)
 (in phosphor compns. for low-energy electron-
 beam-excited red-emitting display
 devices)

*RN 7440-50-8 HCA
 CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IC C09K011-46
 CC 76-7 (Electric Phenomena)
 ST **display device red emitting; display**
low energy electron beam; yttrium oxide sulfide phosphor; vanadate yttrium phosphor; cadmium sulfide phosphor
 IT **Electroluminescent devices**
(low-energy electron-beam-excited, red-emitting)
 IT 7440-50-8, uses and miscellaneous 7440-53-1, uses and miscellaneous
 RL: DEV (Device component use); USES (Uses)
(in phosphor compns. for low-energy electron-beam-excited red-emitting display devices)
 IT 1306-23-6, uses and miscellaneous 1314-36-9, uses and miscellaneous 12340-04-4 13566-12-6
 RL: DEV (Device component use); USES (Uses)
(phosphor compns. containing, for low-energy electron-beam excited red-emitting display devices)

L98 ANSWER 33 OF 44 HCA COPYRIGHT 2005 ACS on STN

86:132247 **Red light-emitting low-energy electron beam-excited fluorescent**
display tubes. Kagami, Akiyasu; Narita, Kinichiro; Mimura, Yoshiyuki; Hiraki, Minoru (Dai Nippon Toryo Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 51145480 19761214 Showa, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1975-69860 19750610.

AB Low-energy **electron beam fluorescent**
display tubes employ Eu-activated complex metal oxide phosphors, ZnO._x(Y_{1-a}Eua)VO₄ [x = 0.04-0.90; a = 0.01-0.3]. Thus, ZnO 1 and Y_{0.96}Eu_{0.04}VO₄ 0.38 mol were mixed together, then fired for 2 h at 1000° in the atmospheric to give the **phosphor** ZnO_{0.38}(Y_{0.96}Eu_{0.04}VO₄). The **phosphor** 200 mg was dispersed in H₂O 100 mL containing water glass 0.01%, and the dispersion was coated on an **Al anode** sheet (2 + 1 cm) supported on a ceramic substrate. A cathode consisting of a W wire heating element coated with an oxide was positioned 5-mm away from the **phosphor** film. The assembly was then placed in a glass tube, and the tube was sealed under a **vacuum** of 10⁻⁵ torr. The **vacuum** within the tube was further improved by using a getter. **Red** light (2.5 ft-Lambert) was emitted on impressing 80 V on the **anode** plate and 1.0 V on the cathode plate (current 50 mA).

IC C09K011-46
 CC 76-7 (Electric Phenomena)

ST Section cross-reference(s): 73, 74
 zinc oxide **phosphor**; europium vanadate **phosphor**;
 yttrium vanadate **phosphor**

IT Optical display devices
 (electron-beam, low-energy, **red**-
 light emitting)

IT **Phosphors**
 (zinc oxide-europium yttrium vanadate, for low-energy
 electron-beam display tubes)

IT 1314-13-2, uses and miscellaneous
 RL: USES (Uses)
 (**phosphors**, europium yttrium vanadate-, for low-energy
 electron-beam display tubes)

IT 13537-11-6D, solid solns. with yttrium vanadate 13566-12-6D, solid
 solns. with europium vanadate
 RL: USES (Uses)
 (**phosphors**, zinc oxide-, for low-energy
 electron-beam display tubes)

L98 ANSWER 34 OF 44 HCA COPYRIGHT 2005 ACS on STN
 85:115625 Alpha barium zinc cadmium sulfide **phosphors** and
 method. Fan, Albert K.; Tecotzky, Melvin (United States Radium
 Corp., USA). U.S. US 3970582 19760720, 4 pp. (English). CODEN:
 USXXAM. APPLICATION: US 1975-637840 19751204.

AB A **phosphor** is described which is isostructural with
 Ba₂MnS₃ and has the chemical composition Ba₂Zn_{1-y}Cd_yS₃:Aw.zZnS, where A is
 an activator element consisting of Mn, Eu, Ce, Pb, or Tb,
 $0 \leq y \leq 1$, $0 \leq z \leq 20$, and $0.00001 < w < 0.1$.
 0.1. **Red-emitting phosphors** can be Cd-free and are activated with Mn or Eu.
Green-emitting phosphors can be Cd-free and are activated with Ce, Pb, or Tb. The
phosphors respond to uv, electron, or x-ray excitation. The
phosphors are manufactured by heating an appropriate mixture in a
 nonoxidizing atmospheric at 600-1000° for 0.5-30 hr and then cooling
 the product to room temperature. The cooled product is ground and reheated
 at 600-1000° in a nonoxidizing atmospheric for 0.5-30 hr.

IT 7439-96-5, uses and miscellaneous
 RL: USES (Uses)
 (**phosphors**, from barium zinc sulfide
 containing)

RN 7439-96-5 HCA

CN Manganese (8CI, 9CI) (CA INDEX NAME)

Mn

IC C09K011-46
 NCL 252301600S
 CC 76-7 (Electric Phenomena)
 Section cross-reference(s): 73
 ST **phosphor barium zinc sulfide**
 IT **Phosphors**

(barium zinc sulfide, red or
green emitting)

IT 12231-65-1D, Barium zinc sulfide (Ba2ZnS3),
solid solns. with barium cadmium sulfide 51680-95-6D, Barium
cadmium sulfide (Ba2CdS3), solid solns. with barium zinc
sulfide 60488-24-6

RL: USES (Uses)
(phosphors)

IT 7439-92-1, uses and miscellaneous 7439-96-5, uses and
miscellaneous 7440-27-9, uses and miscellaneous 7440-45-1, uses
and miscellaneous 7440-53-1, uses and miscellaneous

RL: USES (Uses)
(phosphors, from barium zinc sulfide
containing)

IT 12231-65-1
RL: USES (Uses)
(phosphors, with red or green
emission)

L98 ANSWER 35 OF 44 HCA COPYRIGHT 2005 ACS on STN

85:27844 Cadmium-free green light

-emitting cathodoluminescent phosphor for color
television tubes. Layman, H. David; Minnier,
Henry B. (GTE Sylvania, Inc., USA). Ger. Offen. DE 2542332
19760415, 18 pp. (German). CODEN: GWXXBX. APPLICATION: DE
1975-2542332 19750923.

AB A green-emitting phosphor for color
television picture tubes, consisting of
ZnS activated with 50-150 ppm Cu and 100-400 ppm
Al, is prepared by heating the mixed powders in a double
crucible with activated C in the space between the inner and outer
crucibles to 950-1010° for 15-60 min in a nonoxidizing atmospheric,
cooling from the heating temperature to 760-870° at
2-30°/min in a nonoxidizing atmospheric, and cooling from
760-870° to <40° at ≥50°/min. By using
the proper heating and cooling rates, phosphors with
satisfactory brightness and pure green emission can be
obtained.

IT 1314-98-3, uses and miscellaneous

RL: USES (Uses)
(phosphors from copper- and aluminum
-activated, for color television)

RN 1314-98-3 HCA

CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S==Zn

IT 7440-50-8, uses and miscellaneous

RL: USES (Uses)
(phosphors from zinc sulfide
activated with aluminum and, for color television)

RN 7440-50-8 HCA

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT 7429-90-5, uses and miscellaneous
 RL: USES (Uses)
 (phosphors from zinc sulfide
 activated with copper and, for color television)

RN 7429-90-5 HCA

CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

IC C09K011-30
 CC 76-7 (Electric Phenomena)
 Section cross-reference(s): 73
 ST phosphor green color television; zinc
 sulfide phosphor; copper activated
 zinc sulfide; aluminum activated
 zinc sulfide

IT Phosphors
 (cathodoluminescent green-emitting, for color
 television)

IT 1314-98-3, uses and miscellaneous
 RL: USES (Uses)
 (phosphors from copper- and aluminum
 -activated, for color television)

IT 7440-50-8, uses and miscellaneous
 RL: USES (Uses)
 (phosphors from zinc sulfide
 activated with aluminum and, for color television)
 IT 7429-90-5, uses and miscellaneous
 RL: USES (Uses)
 (phosphors from zinc sulfide
 activated with copper and, for color television)

L98 ANSWER 36 OF 44 HCA COPYRIGHT 2005 ACS on STN
 79:151210 Structural and optical properties of
 electroluminescent zinc-cadmium sulfide phosphors.
 Kulkarni, V. S.; Ambardekar, D. S. (Dep. Chem., Shivaji Univ.,
 Kolhapur, India). Indian Journal of Chemistry, 11(8), 792-5
 (English) 1973. CODEN: IJOCAP. ISSN: 0019-5103.

AB Electroluminescent (EL) properties of (Zn, Cd)S
 phosphors activated by Cu and Mn were
 examined, especially with respect to the effect of Cd concentration on the
 EL emission intensity and spectral distribution along with
 structural relations. In the yellow and orange
 phosphors, containing Cu⁺, Cd²⁺, and Mn²⁺ ions, the
 role of crystal phase is completely suppressed, as the emissions are
 due to the transitions between localized levels of Cd²⁺ or Mn²⁺
 ions, whereas in the case of blue and green

phosphors, activated by Cu⁺ ions, they are between the perturbed crystal states and the levels in the crystal band. An increase in Cd content increases the hexagonal phase (α -form) in the final **phosphor** without deterioration of its quality. Similarly complete absence of ZnO and β -ZnS phase in the final **phosphor** does not affect the EL brightness. Intensity measurements of selected **phosphors** in the series show that they follow the usual exponential relation $L = Ae - B/V + V^\circ$ which tends to be linear for higher Cd, concns. without affecting the λ maximum

IT 1314-98-3D, Zinc sulfide, solid solns.

with cadmium sulfide

RL: PRP (Properties)

(electroluminescent properties of copper- and manganese-activated)

RN 1314-98-3 HCA

CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S==Zn

CC 73-3 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)

ST electroluminescence cadmium zinc sulfide; copper electroluminescence sulfide; manganese electroluminescence sulfide

IT Luminescence

(electro-, of cadmium-zinc sulfide phosphors activated by copper and manganese)

IT 16397-91-4, properties 17493-86-6, properties

RL: PRP (Properties)

(electroluminescence of cadmium sulfide-zinc sulfide phosphors containing)

IT 1306-23-6D, Cadmium sulfide, solid solns. with zinc sulfide 1314-98-3D, Zinc sulfide

, solid solns. with cadmium sulfide

RL: PRP (Properties)

(electroluminescent properties of copper- and manganese-activated)

L98 ANSWER 37 OF 44 HCA COPYRIGHT 2005 ACS on STN

71:34529 Cathodoluminescent screens. (Sylvania Electric Products Inc.).

Brit. GB 1153754 19690529, 10 pp. (English). CODEN: BRXXAA.

PRIORITY: US 19650616.

AB Screens for color television tubes

comprise 3 sequentially deposited **phosphors**:

green emitter, ZnS/ZnSe doped with Ag; red

emitter, vanadates or oxides of Y, Gd, or Lu doped with Eu or Sm;

blue emitter, ZnS:Ag. This system is superior in

chromaticity over screens containing ZnS/CdS:-Ag as the

green-emitting component. Dopant:host ratios are 0.001-0.1

weight %.

IT 1314-98-3, uses and miscellaneous
 RL: USES (Uses)
 (cathodoluminescent screens containing silver-doped zinc selenide
 and, for color television tubes)
 RN 1314-98-3 HCA
 CN Zinc sulfide (Zns) (9CI) (CA INDEX NAME)

S==Zn

IC H01J
 CC 71 (Electric Phenomena)
 ST cathodoluminescent screens prodn; television
 screens prodn; color television screens
 prodn; luminescent screens prodn; zinc
 sulfides selenides phosphors; sulfides selenides
 Zn phosphors; rare earth vanadates phosphors;
 selenides sulfides Zn phosphors; vanadates
 phosphors
 IT Luminescent screens
 (cathodo-, cadmium-free, for color
 television tubes)
 IT 1314-98-3, uses and miscellaneous
 RL: USES (Uses)
 (cathodoluminescent screens containing silver-doped zinc selenide
 and, for color television tubes)
 IT 1315-09-9
 RL: USES (Uses)
 (cathodoluminescent screens containing silver-doped zinc
 sulfide and, for color television tubes
)
 IT 7440-22-4, uses and miscellaneous
 RL: USES (Uses)
 (cathodoluminescent screens containing zinc selenide-zinc
 sulfide solid solns. doped with, for color
 television tubes)

L98 ANSWER 38 OF 44 HCA COPYRIGHT 2005 ACS on STN
 56:77451 Original Reference No. 56:15052b-d Electroluminescent
 substances on zinc-mercury sulfide base. Wachtel, Anselm
 (Westinghouse Electric Corp.). DE 1121751 19620111 (Unavailable).
 PRIORITY: US 19590420.

AB For green to red luminescence, the
 poisonous Se component can be avoided on the base of Cu
 -activated Zn-Hg or Zn-Cd-Hg sulfide, if the latter contain
 sufficient amts. of a coactivator, differing from the Cu
 activator for 2 units of valence, e.g., Cl, Br, I, Al, Sc,
 Ga, or In. First a Zn-Cd sulfide is manufactured, then 0.016 mole of
 this product is mixed with 0.004 mole HgS and 5 mg. S and heated to
 800-950° for several hrs. in an evacuated quartz tube. In
 the absence of Cd, a Zn: Hg ratio of 100: 1
 gives a green and 3:1 a deep red
 luminescence. In the presence of Cd, Cd: Hg = 1:1 is

recommended, a (Cd + Hg)-total of 2% giving **green**, 7% **yellow**, 17% **orange**, and 39% **deep-red** light. The intensity is greater than on a Zn-Se base, e.g. for an elec. current frequency of 400/sec., 9.6 lumens/sq. m. (88.4 mole% **ZnS** + 11.6% **CdS**, + 0.63% **Cu acetate** + 0.65% **NH4Br** + 0.65% **NH4I** + small amts. S, heated 1 hr. to 950°, + 8.7% **HgS** + small amts. S, heated 2 hrs. to 900°); for 10,000/sec., 85 lumens/sq. m. (86 mole % **ZnS** + 14% **CdS**, + **Cu** and coactivators and heat-treatment as above, + 10.5% **HgS**). The addition of **Mn** as addnl. activator is possible. Cf. CA 53, 8834h.

IT **7440-50-8, Copper**
 (**phosphors** containing, **electroluminescent**)
 RN 7440-50-8 HCA
 CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT **1314-98-3, Zinc sulfide**
 (solid solns. of, with CdS and(or) HgS, containing **Cu** and coactivator, **electroluminescent**)
 RN 1314-98-3 HCA
 CN Zinc sulfide (**ZnS**) (9CI) (CA INDEX NAME)

S==Zn

NCL 22F
 CC 9 (Electric and Magnetic Phenomena)
 IT **Luminescence**
 (electro-, of CdS-HgS-ZnS containing **Cu** and coactivator)
 IT **7440-50-8, Copper**
 (**phosphors** containing, **electroluminescent**)
 IT 1306-23-6, Cadmium sulfide
 (**phosphors** from **ZnS**, solid solns. with **HgS** and **ZnS**, containing **Cu** and coactivator, **electroluminescent**)
 IT 1344-48-5, Mercury sulfide, **HgS**
 (solid solution with CdS and(or) **ZnS**, containing **Cu** and coactivator, **electroluminescent**)
 IT **1314-98-3, Zinc sulfide**
 (solid solns. of, with CdS and(or) HgS, containing **Cu** and coactivator, **electroluminescent**)

L98 ANSWER 39 OF 44 HCA COPYRIGHT 2005 ACS on STN
 54:108067 Original Reference No. 54:20515h-i,20516a-c (**Zn,Hg**S and (**Zn,Cd,Hg**)S **electroluminescent phosphors**). Wachtel, A. (Westinghouse Elec. Corp., Bloomfield, NJ). Journal of the Electrochemical Society, 107, 682-8 (Unavailable) 1960. CODEN: JESOAN. ISSN: 0013-4651.

AB Introduction of Hg into **ZnS:Cu phosphors**

causes a shift in emission to longer wave lengths which, for moderate substitution, is about 4 times as high as that caused by similar mol. concns. of Cd. At sufficient activator concns. **electroluminescence (EL)** is observed. For compns. emitting in the **red** end of the spectrum, the quantum efficiency of the **EL** was of the same order of magnitude as that of **green**-emitting **ZnS:Cu, Cl**. This is attributed to the cubic modification of the system, favored by the presence of HgS, even in ternary (Zn,Cd,Hg)S composition whose concentration of Cd would, in the **absence** of Hg, result in hexagonal and non-**EL** systems. Procedures for the preparation of (Zn,Hg)S and (Zn,Cd,Hg)S **EL phosphors** have been described. All procedures involve firings with HgS in sealed tubes, by using only prefired raw materials. Especially for low-frequency excitation, the substitution of Hg for Zn enables the use of Ga or In as coactivators, presumably due to a decrease in trap depth caused by lowering of the conduction band. For **phosphors** emitting in the **red** end of the spectrum, the relative heights of the 2 emission bands are primarily dependent on Hg concentration. Their identity cannot be assumed in terms of an analogy with the blue- and **green**-emission bands in **ZnS:Cu phosphors**. The (Zn,Hg)S:Cu and (ZnCd,Hg)S:Cu **EL phosphors** are preferable to the ZnSe:Cu **EL phosphors**, mainly because of their better response at low frequencies of excitation. At higher HgS concns., **EL** emission occurring entirely in the infrared has been obtained. A serious disadvantage is, however, the high volatility of HgS which necessitates special techniques of **phosphor** preparation.

IT 7440-50-8, **Copper**
 (**phosphors** containing, **electroluminescence** of)
 RN 7440-50-8 HCA
 CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT 1314-98-3, **Zinc sulfide**
 (**phosphors** from CdS, HgS and,
 electroluminescence of)
 RN 1314-98-3 HCA
 CN Zinc sulfide (Zns) (9CI) (CA INDEX NAME)

S==Zn

(**phosphors**, **electroluminescence** of **Cu**
 -**contg.**)
 CC 3 (Electronic Phenomena and Spectra)
 IT **Luminescence**
 (**electro-**, of CdS and **Zns** containing HgS)
 IT Trapping

IT (in phosphors, electroluminescence and)
 IT Mercury sulfide, HgS, phosphors of CdS, ZnS and
 (electroluminescence of)
 IT 7440-50-8, Copper 7440-55-3, Gallium
 7782-50-5, Chlorine
 (phosphors containing, electroluminescence of)
 IT 7440-74-6, Indium
 (phosphors containing, electroluminescent)
 IT 1314-98-3, Zinc sulfide
 (phosphors from CdS, HgS and,
 electroluminescence of)
 IT 1306-23-6, Cadmium sulfide
 (phosphors of HgS, ZnS and,
 electroluminescence of)
 IT 1314-98-3, Zinc sulfide
 (phosphors, electroluminescence of Cu
 -containing)

L98 ANSWER 40 OF 44 HCA COPYRIGHT 2005 ACS on STN
 50:11258 Original Reference No. 50:2304f-g Luminous discharge
 tube. Tellmann, Wilhelm; Tellmann, Wilhelm; Zapf, Helmut DE 828422
 19520117 (Unavailable). APPLICATION: DE .

AB The Hg vapor-filled discharge tube is lined with a
 luminescent layer composed of Cd silicate
 free from excess SiO₂ and activated by Li₂O and Mn
 less than 0.2%, possibly in admixt. with other luminescent
 substances, such as Zn silicate or tungstate. A c.d. of 0.01-0.3
 amp./sq. cm. yields a particularly high output of a yellow
 -red luminescent light.

IT 7439-96-5, Manganese
 (phosphors containing, elec. lamp coated with)
 RN 7439-96-5 HCA
 CN Manganese (8CI, 9CI) (CA INDEX NAME)

Mn

NCL 21F; 83-03
 CC 3 (Electronic Phenomena and Spectra)
 IT Luminescent substances
 (elec. lamp containing, Hg-vapor filled)
 IT Lamps, electric
 (luminescent, Hg-vapor-filled)
 IT Marking
 (metals with luminescent)
 IT Cadmium silicate, phosphor
 Zinc tungstate, phosphor
 (elec. lamp containing)
 IT 12057-24-8, Lithium oxide, Li₂O
 (phosphor containing, elec. lamp containing)
 IT 7439-96-5, Manganese
 (phosphors containing, elec. lamp coated with)
 IT 11126-29-7, Zinc silicate

(phosphors, elec. lamp containing)

L98 ANSWER 41 OF 44 HCA COPYRIGHT 2005 ACS on STN
 45:38992 Original Reference No. 45:6684c-i,6685a-i,6686a-g Antibiotics from actinomycetes. V. Actinomycin C. Brockmann, Hans; Grubhofer, Nikolaus; Kass, Wilhelm; Kalbe, Hans (Univ. Gottingen, Germany). Chemische Berichte, 84, 260-84 (Unavailable) 1951. CODEN: CHBEAM. ISSN: 0009-2940.

AB cf. C.A. 44, 6914c; 45, 5230h. A new antibiotic, actinomycin C (I), has been isolated from Streptomyces chrysomallus (II) and is investigated chemically. II is grown at 28° on a nutrient containing, per 1., 20 g. glycerol, 10 g. KNO₃, 5 g. K₂HPO₄, 5 g. NaCl, 5 g. MgSO₄.7H₂O, and 0.01 g. FeSO₄.7H₂O. After 26 days the mycelium is filtered, dried at 100°, powdered, and extracted with C₆H₆. The residual aqueous solution is exhaustively extracted with BuOAc, the extract evaporated, and the residue combined with the C₆H₆ extract and filtered through an Al₂O₃ II column. Upon development of the chromatogram with C₆H₆ an **orange-red** zone, containing I, is obtained and eluted with EtOAc. The eluate is concentrated in vacuo and the residue diluted with twice its volume CS₂, causing I to crystallize. It is washed with EtOAc-CS₂ (1:2) and recrystd. from EtOAc, giving hexagonal alizarin **red** bipyramids, m. 252° (decomposition).

Because the composition of I seems to change with the age of

the strain, I obtained in the early expts. is designated "old" (Ia), that obtained later, "new" (Ib). Ia, C₆₂H₈₉O₁₇N₁₁, contains 59.05% C, 7.07% H, 12.24% N, 5.4% N-Me, 0.63% active H; d. 1.0155, [α]_{17D} -319° ± 3°, -312°, -290°, -250°, -240° (c 5, 2.5, 1, 0.5, 0.25, EtOH); solubility in absolute EtOH is 7%, in C₆H₆, 27%, in CHCl₃ 65%, Me₂CO 120%, H₂O 0.14%; mol. weight 705 (Rast), 915 (Beckmann, PhOH), 876-944 (Barger-Rast, tetrahydrofuran). Ib, C₆₀H₈₃O₁₆N₁₁, contains 59.65% C, 6.87% H, 12.75% N; [α]_{17D} -309° ± 3° (c 2.5, EtOH). I arrests the growth of Staphylococcus aureus in dilns. of up to 1:10,000,000 and Escherichia coli in dilns. of up to 1:10,000. I is toxic to a mouse in doses of 50 mg./kg. when administered orally as aqueous solution and 5 mg./kg. on intraperitoneal administration, within 24 hrs. I seems to be different from actinomycin A (Waksman and Tischler, C.A. 36, 2883.8) and B (Dalglish, et al., C.A. 45, 6160h). On catalytic hydrogenation in AcOH in the presence of PtO₂ 100 mg. Ia absorbs 1.8 cc. H and 330.9 mg. Ib 6.1 cc. H, from which mol. wts. of 1280 and 1218 are calculated. On dissolving the light-**yellow** hydrogenation product (III) of Ib in C₆H₆ the solution changes to **red-yellow** by autoxidation, giving 92% Ib. Ia (175 mg.) in BuOH and 50% HClO₄, gives 180 mg. C₆₂H₈₉O₁₇N₁₁.3HClO₄, m. 192° (corrected). Ia refluxed 2 hrs. with Ac₂O and C₅H₅N is recovered unchanged. Reductive acetylation of 200 mg. Ia in 2 cc. Ac₂O and 1 drop C₅H₅N with 500 mg. Zn dust gives 140 mg. leucoacetate, C₆₂H₈₉O₁₇N₁₁Ac₂, light-**yellow** rectangular platelets, m. 253° (corrected). I does not seem to contain primary or secondary NH₂ groups and gives a neg. ninhydrin reaction. With Nessler's reagent I gives a gray-brown precipitate which can be used

for the marking of I on the paper chromatogram. Because of indications that I may be a mixture of closely related compds. Ib is subjected to a 40-step countercurrent distribution (C.A. 44, 7096e), by using the solvent pairs BuOH-AcOH, C₆H₆-AcOH, and HCO₂H-CH₂C₁₂ and thus producing a distribution curve which indicates that Ib is a pure compound. Although Ib is soluble in ether-HCl only to 0.1% in each phase, 80 mg. is fractionated in an apparatus that holds 800 cc./step. Fractions 19-25 are redistributed in a 100-cc./step apparatus, giving a curve that indicates a mixture. However, since I is sensitive towards acids it is possible that in ether-HCl some hydrolysis products are formed although I is not changed in 6% HCl during 2 hrs., the time required for the distribution process. The fact that threonine-free fractions are obtained can be explained only by the assumption that I is a mixture. From a comparison of the curves obtained from various preps. of I produced by the original strain and by strains repeatedly transferred, it is found that the latter produce more complicated mixts. than the former. For the elucidation of the amino acid portion of I, uniform samples must be used, for that of the chromophoric part, a mixture can be used. On hydrolysis of I with HCl a black-brown precipitate is obtained which originates from the amino acid-free portion and contains some black melanin-like products from which no crystalline compound can be isolated. Ia (487 mg.) is heated with 3 cc. concentrated HCl 9 hrs. in a sealed tube at 125° and the tube is opened in such a way that the gases are passed through Ba(OH)₂, giving 51.8 mg. BaCO₃ (0.75 mol./ mol. I). The black precipitate amounts to 103 mg. (24%). The acid solution is decolorized and evaporated, giving 69% residue (IV) with 3.3% NH₂-N and $[\alpha]_{16D} -47.8^\circ$. IV contains 2.06 mg. NH₃-N, determined with H₂PtCl₆. Refluxing 36 hrs. 6.18 g. Ia in 40 cc. 30% H₂SO₄ at 110° gives 0.72 mol. CO₂ and 1.4 g. (23%) black precipitate containing 54.53% C, 5.11% H, 6.22% N, and 1% N-Me.

The filtrate is freed of H₂SO₄ with Ba(OH)₂ and evaporated to dryness, giving 3.9 g. (63%) crystalline residue (V). V (1.93 g.) is extracted with 20 cc. EtOH, leaving 0.83 g. residue (VI). The residue (1.1 g.) of the alc. extract is extracted twice with 10 cc. 99% EtOH and leaves 90 mg. residue (VII) which, after 2 crystns., m. 245-55° and is identified paperchromatographically as threonine (VIII). The filtrate of VII is treated with 30 cc. saturated alc. CdCl₂ solution, the precipitate formed is freed of Cd with H₂S, and the concentrated filtrate treated with reinecke acid (IX), giving 257 mg. L-proline (X) reineckate (Xa), m. 198°, from which 60 mg. X, m. 212°, $[\alpha]_{17D} -78^\circ$ (H₂O) (picrate m. 146°) is regenerated. The filtrate of Xa is freed of IX and concentrated; it shows the RF value of valine (XI) and gives a small quantity of needles, m. 160°, which give a red ninhydrin reaction and an intense odor of NH₂Me when heated with NaOCl. Recrystn. of VI and sublimation (170°/0.01 mm.) give 533 mg. sublimate (XII), showing the RF values of isoleucine (XIII) and XI. XII is dissolved in 2 N NaOH, treated with 3,5-(O₂N)₂C₆H₃COCl, and the mixture adjusted to pH 4, causing the separation of crystals, m. 186°. Adjusting the pH to 3 gives 80 mg. XIII 3,5-dinitrobenzoate, m. 178°, from which, on hydrolysis with HCl, 15 mg. XIII, m. 247°, $[\alpha]_{17D}$

-14.4° (H₂O) is regenerated. In another experiment with 300 mg. IV, 70 mg. XIII, m. 276°, [α]17D -15.2° (H₂O) is obtained. IV with 9.6% total N, 3.1% amino N, and 5.1% N-Me is separated paperchromatographically (for details see original paper), with o-cresol as mobile phase and a 0.4% ninhydrin solution in BuOH as developer. The 6 zones are cut out and eluted with H₂O. Zone 1 gives 4.3% VIII, m. 240-2°, [α]20D 7° (H₂O), which, oxidized with HIO₄ gives ACh. Because of overlapping, zones 2-4, containing sarcosine (XIV), D-XI, and D-alloisoleucine (XV), are eluted together and rechromatographed with BuOH-20% AcOH as phase pair, giving the same sequence of zones. Zone 2 gives 1.6% XIV, identified by RF values of pure XIV (RF in o-cresol 0.34, in BuOH-AcOH 0.17-0.21, in PhCH₂OH 0.08, in PhOH 0.73, in sec-BuOH 0.84, in collidine 0.08). Zone 3 gives 1% D-XI, m. 296°, [α]16D 5.8° (H₂O), -24.9° (20% HCl). Zone 4 gives 24% XV, m. 284°, [α]16D -15.6° (H₂O), -31.8° (c 2.7, 20% HCl) (phenylisocyanate m. 157°; naphthylisocyanate m. 167-8°; HCO derivative, prepared by heating 20 mg. with 1 cc. anhydrous HCO₂H, m. 125°). Decomposition of 10 mg. with ninhydrin according to Lohr (C.A. 44, 5422h) gives an optically active 2,4-dinitrophenylhydrazone, m. 130°. Zone 5 gives 20% X, m. 128°, [α]18D -75.4° (H₂O) (reineckate m. 199°). Zone 6 gives 42% N-methyl-L-valine (XVI), m. 290°, [α]16D 16.5° (H₂O), 28.6° (10 Ngr; HCl). To prevent the formation of a black precipitate on hydrolysis of I, 230 mg. I is heated with 4 cc. concentrated HCl and 160 mg. SnCl₂ 16 hrs. at 90°, causing the formation of a red precipitate which is extracted with BuOH. The aqueous solution is freed of Sn with H₂S, evaporated, and gives the same 6 amino acids in the paper chromatogram. The yellow-red BuOH solution is shaken with 1 cc. 0.5% H₂O₂, causing a deepening of the color, evaporated in vacuo, the residue dissolved in CHCl₃, filtered through a silica column, and evaporated, giving a red powder from which, on hydrolysis with concentrated HCl, no amino acids are obtained (paper chromatogram). Heating 170 mg. Ib with 5 cc. AcOH, 3 cc. HI, and 0.8 g. PH4I 12 hrs., evaporating the mixture, distributing the residue in 10 cc. H₂O and 10 cc. C₆H₆, and filtering the dried C₆H₆ solution through a silica column give a small brown zone and an intense blue fluorescent filtrate which, evaporated, gives colorless needles, m. 114-15°. On hydrolysis with concentrated HCl no amino acids are obtained. In the original aqueous phase the amino acids, except VIII, are found. Heating 598 mg. Ib with 12 cc. 6 Ngr; HCl 25 min. at 100°, diluting the mixture to 60 cc., extracting it with ether, and evaporating the ether leaves no residue. The aqueous solution is evaporated in vacuo, the residue dissolved in borate buffer solution (pH 10), and steam distilled, giving 5.9 mg. NH₃. When 200 mg. Ib is kept 2 weeks with 20 cc. AcOH-10% HCl (1:1) at 37° and a sample is tested in a bidimensional paper chromatogram with PhOH-collidine as mobile phases, only weak spots of XVI and XV can be detected. After 8 weeks the spots of the other

amino acids appear. After 16 weeks the mixture is evaporated in a desiccator and the residue is extracted successively with CHCl₃, Me₂CO, and BuOH, leaving a small amount of a black residue. The residues of the 3 exts. are red-brown amorphous products, give an intense green color with SnCl₂, and are free of amino acids. On heating with 20% HCl 24 hrs. a black melanin-like precipitate is formed and in the filtrate all amino acids are found in the paper chromatogram. Heating 1 g. Ia with 10 cc. 20% HCl 20 min. at 105°, dissolving the residue of the evaporated (in vacuo) solution in 10 cc. H₂O, filtering the solution through an Al₂O₃ column, and washing the column with 0.1 N HCl produces a yellow-red zone [zone base (XVII)] and a yellow filtrate.

The filtrate containing the eluate base (XVIII) is concentrated in vacuo and treated with HgCl₂ and the precipitate formed is decomposed with H₂S, filtered, and evaporated, giving the HCl salt of XVIII which is readily hydrolyzed, forming the free XVIII; it gives an orange-red precipitate with HAuCl₄ and a yellow-brown picrolonate. XVII is eluted with C₅H₅N-H₂O (1:1) and forms an amorphous picrolonate. On prolonged treatment with HCl, XVIII changes to XVII. To obtain XVIII in a better yield, I is heated with 6 N HCl 5 min. at 100°, the mixture is evaporated in vacuo, and the residue extracted with H₂O. The unchanged I is treated again in the same way until completely hydrolyzed. To remove XVII the aqueous extract is passed through an Al₂O₃ column, XVIII is extracted from the filtrate with CHCl₃, and XVIII-HCl is formed. It gives an orange-red picrate. XVII and XVIII treated with HNO₂ evolve only very little N but form red NO compds.

Hydrolysis of Ib with azeotropic HCl 0.5 hr. on a water bath, evaporating the mixture in vacuo, extracting the residue with BuOH, passing the BuOH solution through Al₂O₃, eluting XVIII with BuOH, washing the column with EtOH, H₂O, and, finally, with 0.1 N NaOH, acidifying the alkaline eluate, and extracting with BuOH-CHCl₃ (1:9) give XVII-HCl which is further purified via its picrate. XVII shows an amphoteric behavior and can be esterified with MeOH-HCl. XVII and XVIII are reduced by SnCl₂, giving a deep-green intermediate (XIX), λ_{maximum} 684, 622, 568 m μ (ACOH), and a pale-yellow leuco compound which is oxidized by air again via XIX to the original red-yellow compound

CC 11C (Biological Chemistry: Microbiology)

L98 ANSWER 42 OF 44 HCA COPYRIGHT 2005 ACS on STN
 43:24614 Original Reference No. 43:4577i,4578a-e The yield of luminescence of crystal phosphors in its dependence on the wave length of the exciting light. Alentsev, M. N. Doklady Akademii Nauk SSSR, 64, 479-82 (Unavailable) 1949.
 CODEN: DANKAS. ISSN: 0002-3264.

AB (1) Comparison of the light scattered by 2 surfaces, one coated with the phosphor, the other with a substance the scattering coefficient of which is known to be independent of the wave length λ (e.g. MgO), exposed to the same incident intensity I, in a λ region where the phosphor does not absorb, yields the ratio a of the scattering coeffs. The same comparison in a λ region where the phosphor absorbs and is excited,

yields a different ratio b. A third ratio, c, is obtained on simultaneous exposure to the exciting λ and to quenching infrared radiation. The luminescent energy is proportional to b - c, the absorbed energy to a - c, and the relative yield (at a given λ) $p = (b - c)/(a - c)$. In visual observation, it is necessary to correct for the spectral sensitivity of the eye. Measurements of p as a function of the exciting λ , or ZnS.Cu (10⁻⁴ g./cc.) with Co (I), ZnS.Cu (10⁻⁵) with Co (II) and ZnS.

CdS (25% Cd) without activator (III), all 3 susceptible to quenching by infrared, showed a decrease of p with increasing λ . However, unlike fluorescent solns. of dyes, crystal phosphors show beginning drop of p at λ considerably shorter than the mean λ of the emission spectrum. Thus, I has a maximum of emission at 520 m μ , but p falls at about 470-480 m μ ; III has an emission maximum in the orange, but p drops completely at about 500 m μ . For a ZnS.Cu (10⁻⁵) phosphor without Co (IV), not susceptible to infrared quenching, b was determined directly, whereas c was taken as equal to that of II, on the assumption that inclusion of Co does not materially alter the absorption. The values of p thus determined also show rapid fall at λ , considerably shorter than the mean λ of emission. (2) The quantum yield of luminescence, ϕ , was determined by comparing its brightness with that of a dye solution exposed to the same λ at the same intensity (Solomin, C.A. 37, 833.3), the concentration of the dye being sufficient to ensure complete absorption, and the absorption of the phosphor at the given λ being determined preliminarily. For willemite, ϕ proves to be constant at λ less than 260 m μ . For ZnS and ZnS

.CdS (25% Cd), both without activator, ϕ between 220 and 380 m μ , did vary with λ , both the variation disappeared completely or almost completely when the intensity of excitation was reduced. One can thus conclude that, at sufficiently weak excitation, ϕ independent of λ .

IT 7440-50-8, Copper
(phosphors containing, luminescence of,
dependence on wave length of exciting light)

RN 7440-50-8 HCA
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT 1314-98-3, Zinc sulfide
(phosphors, exciting radiation and luminescence
of)
RN 1314-98-3 HCA
CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S==Zn

CC 3 (Subatomic Phenomena and Radiochemistry)
 IT Luminescence
 (of phosphors, dependence on wave length of exciting light)
 IT 14374-77-7, Willemite
 (luminescence of, dependence on wave length of exciting light)
 IT 7440-48-4, Cobalt
 (phosphors containing)
 IT 7440-50-8, Copper
 (phosphors containing, luminescence of, dependence on wave length of exciting light)
 IT 1306-23-6, Cadmium sulfide
 (phosphors of ZnS and, luminescence dependence on wave length of exciting light)
 IT 1314-98-3, Zinc sulfide
 (phosphors, exciting radiation and luminescence of)

L98 ANSWER 43 OF 44 HCA COPYRIGHT 2005 ACS on STN
 33:19480 Original Reference No. 33:2826b-c Discharge lamps. (N. V. Philips' Gloeilampenfabrieken). GB 495632 19381116 (Unavailable).

APPLICATION: GB .
 AB A high-pressure metal-vapor lamp containing Hg with Cd and (or) Zn in such quantities that during normal operation their vapors are unsatd. has Cd 1.5-6 or Zn 0.75-3%, or a mixture containing specified quantities of Cd and Zn, and is provided with a layer of red -fluorescent material. Thus, electrodes are spaced 22 mm. apart in a quartz envelope having an internal diameter of 7 mm. and containing A at about 20 mm. Hg with 7.5 mg. Hg and 0.2 mg. Cd. The tube is secured to a bulb having an internal coating of Zn Cd sulfide with or without a blue fluorescent material which may be ZnS and the space between the tube and the bulb is exhausted.

CC 4 (Electrochemistry)

L98 ANSWER 44 OF 44 HCA COPYRIGHT 2005 ACS on STN
 17:9092 Original Reference No. 17:1598e-i,1599a-b Subsidiary valence. XXVI. Complexes with sulfur dioxide. Ephraim, Fritz; Aellig, Clara Helvetica Chimica Acta, 6, 37-53 (Unavailable) 1923. CODEN: HCACAV. ISSN: 0018-019X.

AB The absence of relation between ionizing power of a solvent and its ability to form addition compds. is indicated by the fact that SO₂, in contrast to H₂O and NH₃, forms addition compds. only with iodides and thiocyanates of alkali and alkaline earth metals and badly defined products with Al halides, The tensions of these compds. are nearly independent of the nature of the metal ion. It is here shown that alkali metal salts of fatty acids and BzOH add SO₂, the capacity being least in formates and increasing in the order acetate, propionate, butyrate, valerate. Li salts add no SO₂, Na less well than K, Rb and Cs. The formates add: Na, 0; K, about 0.5; Rb and Cs, 1 mol. SO₂. All other compds. add 1 mol. at temps. above 0°. Gaseous SO₂ is taken up slowly and the reaction is

completed with difficulty. Liquid SO₂ is preferable. The Na salts, even out of contact with air, gradually lose SO₂ much as silicic acid gel loses water on aging. The K, Rb and Cs compds. are stable up to about 80° and loss of SO₂ is accompanied by other decomposition reactions. Formates, but no other salts, decompose on heating with separation of S. The addition compds. at room temperature are colorless except the formates, which are orange, like those of the alkali iodides, and impart a yellow color to the liquid SO₂. The Cs compds. are soluble in liquid SO₂ but impart no color to it. The cause of the yellow color of concentrated NaHSO₃ solns. was investigated. It is not due to impurities as has frequently been assumed. With purest materials the color invariably developed when SO₂ was led into solns. of NaOH, KOH, NH₄OH or of alkali carbonates, sulfites, bisulfites, formates, acetates and to a less degree in Ca(OH)₂ and (AcO)Zn. No color developed in alkali chlorides, nitrates, sulfates, bisulfates or in alkaline earth (except Ca) hydroxides or carbonates, in Mg or Cd hydroxides or in free H₂SO₄. The color does not appear in solns. more dilute than 0.5 N and reaches a maximum in 5 N solns., in which it is quite stable. It is about the tint of dilute chromate solns. and its absorption spectrum was almost identical with that of chromate solution of the same tint. That a compound is formed is shown by the fact that the solns. upon dilution do not follow Beer's law; a 5 N solution of the K salt showed more than 10 times the color intensity of a N solution. The yellow compound could not be isolated. It is certain that the SO₂ content of the yellow solution exceeds that required for the formula of bisulfite by only an inconsiderable amount

CC 6 (Inorganic Chemistry)

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L3	1 SEA FILE=REGISTRY ABB=ON	PLU=ON	12064-18-5/RN
L4	1 SEA FILE=REGISTRY ABB=ON	PLU=ON	12060-59-2/RN
L5	1 SEA FILE=REGISTRY ABB=ON	PLU=ON	7440-57-5/RN
L6	1 SEA FILE=REGISTRY ABB=ON	PLU=ON	7440-50-8/RN
L7	1 SEA FILE=REGISTRY ABB=ON	PLU=ON	7440-10-0/RN
L8	1 SEA FILE=REGISTRY ABB=ON	PLU=ON	7439-96-5/RN
L9	1 SEA FILE=REGISTRY ABB=ON	PLU=ON	7429-90-5/RN
L10	1 SEA FILE=REGISTRY ABB=ON	PLU=ON	1314-98-3/RN
L11	9 SEA FILE=REGISTRY ABB=ON	PLU=ON	(SR(L)TI(L)O(L)PR)/ELS(L)4/ELC.SUB
L13	38 SEA FILE=REGISTRY ABB=ON	PLU=ON	(SR(L)TI(L)O(L)AL)/ELS(L)4/ELC.SUB
L14	4 SEA FILE=REGISTRY ABB=ON	PLU=ON	(ZN(L)S(L)CU(L)AL)/ELS(L)4/ELC.SUB
L16	19 SEA FILE=REGISTRY ABB=ON	PLU=ON	(ZN(L)S(L)CU)/ELS(L)3/E LC.SUB
L17	3 SEA FILE=REGISTRY ABB=ON	PLU=ON	(ZN(L)S(L)AL)/ELS(L)3/E LC.SUB
L20	11 SEA FILE=REGISTRY ABB=ON	PLU=ON	(ZN(L)GA(L)O(L)MN)/ELS(L)4/ELC.SUB
L21	403 SEA FILE=HCA ABB=ON	PLU=ON	L3

L22 608 SEA FILE=HCA ABB=ON PLU=ON GALLIUM(W)ZINC(W)OXIDE OR
GA2ZNO4OR ZINC(W)GALLIUM(W)OXIDE OR ZNGA2O4

L23 14136 SEA FILE=HCA ABB=ON PLU=ON L4

L24 19908 SEA FILE=HCA ABB=ON PLU=ON STRONTIUM#(A)TITANATE# OR
SRTIO3

L25 147195 SEA FILE=HCA ABB=ON PLU=ON L5

L26 251391 SEA FILE=HCA ABB=ON PLU=ON GOLD OR AU

L27 480212 SEA FILE=HCA ABB=ON PLU=ON L6

L28 1098393 SEA FILE=HCA ABB=ON PLU=ON CU OR COPPER

L29 19596 SEA FILE=HCA ABB=ON PLU=ON L7

L30 167708 SEA FILE=HCA ABB=ON PLU=ON PRASEODYMIUM OR PR

L31 171501 SEA FILE=HCA ABB=ON PLU=ON L8

L32 546903 SEA FILE=HCA ABB=ON PLU=ON MANGANESE OR MN

L33 354400 SEA FILE=HCA ABB=ON PLU=ON L9

L34 1324892 SEA FILE=HCA ABB=ON PLU=ON AL OR ALUMINUM OR ALUMINIUM

L35 25460 SEA FILE=HCA ABB=ON PLU=ON L10

L36 35413 SEA FILE=HCA ABB=ON PLU=ON ZINC(A) (SULFIDE OR MONOSULFI
DE) OR ZNS

L37 9 SEA FILE=HCA ABB=ON PLU=ON L11

L38 18 SEA FILE=HCA ABB=ON PLU=ON PRASEODYMIUM(2A)STRONTIUM(2A)
)TITANIUM(2A)OXIDE OR (PR(2A)SR(2A)TI(2A)O)

L39 24 SEA FILE=HCA ABB=ON PLU=ON L13

L40 96 SEA FILE=HCA ABB=ON PLU=ON ALUMINUM(3A)STRONTIUM(3A)TIT
ANIUM(3A)OXIDE OR (AL(3A)SR(3A)TI(3A)O)

L41 3 SEA FILE=HCA ABB=ON PLU=ON L14

L42 386 SEA FILE=HCA ABB=ON PLU=ON ALUMINUM(3A)COPPER(3A)ZINC(3
A)SULFIDE OR (AL(3A)CU(3A)ZN(3A)S)

L43 40 SEA FILE=HCA ABB=ON PLU=ON L16

L44 5447 SEA FILE=HCA ABB=ON PLU=ON COPPER(3A)ZINC(3A)SULFIDE
OR (CU(3A)ZN(3A)S)

L45 59 SEA FILE=HCA ABB=ON PLU=ON L17

L46 1107 SEA FILE=HCA ABB=ON PLU=ON ALUMINUM(3A)ZINC(3A)SULFIDE
OR AL2ZNS4 OR (AL(3A)ZN(3A)S) OR ZNAL2S4

L47 17 SEA FILE=HCA ABB=ON PLU=ON L20

L48 97 SEA FILE=HCA ABB=ON PLU=ON GALLIUM(3A)MANGANESE(3A)ZINC
(3A)OXIDE OR (GA(3A)MN(3A)ZN(3A)O)

L49 882677 SEA FILE=HCA ABB=ON PLU=ON (EL OR E(W)L OR LED OR
L(W)E(W)D OR OLED ELECTROLUM!N? OR ORGANOLUM!N? OR
(ELECTRO OR ORGANO OR ORG#) (2A)LUM!N? OR LIGHT?(2A)(EMIT?
OR EMISSION? OR SOURCE?) OR LUMINES##### OR FLUORES?
OR PHOSPHORES?)/BI,AB OR LED/IT OR PHOSPHOR# OR LUMIN?

L50 132749 SEA FILE=HCA ABB=ON PLU=ON L49 AND ((L21 OR L22 OR L23
OR L24 OR L25 OR L26 OR L27 OR L28 OR L29 OR L30 OR L31
OR L32 OR L33 OR L34 OR L35 OR L36 OR L37 OR L38 OR L39
OR L40 OR L41 OR L42 OR L43 OR L44 OR L45 OR L46 OR L47
OR L48))

L51 19687 SEA FILE=HCA ABB=ON PLU=ON L50 AND (RED# OR REDDISH OR
YELLOW? OR GREEN? OR ORANG?)

L60 45434 SEA FILE=HCA ABB=ON PLU=ON CRT# OR (DISPLAY? OR
ELECTROCHROMIC## OR ORHOETOELECTROCHROMIC##) (2A)(DEVICE##
OR UNIT##) OR (CATHODE## OR CATHODE#(A)RAY## OR
TELEVISION#) (2A)(TUBE## OR SCREEN# OR DISPLAY##)

L61 19527 SEA FILE=HCA ABB=ON PLU=ON (COMP# OR COMPUTER## OR PORTABLE? OR LAPTOP? OR PLASMA## OR TV OR TELEVISION) (2A) (DISPLAY? OR SCREEN? OR MONITOR?)
 L71 42 SEA FILE=HCA ABB=ON PLU=ON (L4 OR STRONTIUM#(A)TITANATE # OR SRTIO3) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (PRASEODYMIUM OR PR OR L7)
 L72 47 SEA FILE=HCA ABB=ON PLU=ON (L4 OR STRONTIUM#(A)TITANATE # OR SRTIO3) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (AL OR ALUMINUM OR ALUMINIUM OR L9)
 L73 21 SEA FILE=HCA ABB=ON PLU=ON (L4 OR STRONTIUM#(A)TITANATE # OR SRTIO3) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (AL OR ALUMINUM OR ALUMINIUM OR L9) (3A) (PRASEODYMIUM OR PR OR L7)
 L74 811 SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A) (SULFIDE OR MONOSULFIDE) OR ZNS) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (COPPER OR CU OR L6)
 L75 38 SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A) (SULFIDE OR MONOSULFIDE) OR ZNS) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (GOLD OR AU OR L5)
 L76 221 SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A) (SULFIDE OR MONOSULFIDE) OR ZNS) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (ALUMINUM OR ALUMINIUM OR AL OR L9)
 L77 63 SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A) (SULFIDE OR MONOSULFIDE) OR ZNS) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (ALUMINUM OR ALUMINIUM OR AL OR L9) (3A) (COPPER OR CU OR L6)
 L78 8 SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A) (SULFIDE OR MONOSULFIDE) OR ZNS) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (ALUMINUM OR ALUMINIUM OR AL OR L9) (3A) (GOLD OR AU OR L5)
 L79 6 SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A) (SULFIDE OR MONOSULFIDE) OR ZNS) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (ALUMINUM OR ALUMINIUM OR AL OR L9) (3A) (COPPER OR CU OR L6) (3A) (GOLD OR AU OR L5)
 L80 42 SEA FILE=HCA ABB=ON PLU=ON (GALLIUM(3A)MANGANESE(3A)ZINC(3A)OXIDE OR (GA(3A)MN(3A)ZN(3A)O)) (3A) (DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?) (3A) (MANGANESE OR MN OR L8)
 L81 1062 SEA FILE=HCA ABB=ON PLU=ON (L71 OR L72 OR L73 OR L74 OR L75 OR L76 OR L77 OR L78 OR L79 OR L80)
 L82 846 SEA FILE=HCA ABB=ON PLU=ON L81 AND L49
 L83 244 SEA FILE=HCA ABB=ON PLU=ON L82 AND L51
 L87 37 SEA FILE=HCA ABB=ON PLU=ON L83 AND (L60 OR L61)

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L87 ANSWER 1 OF 37 HCA COPYRIGHT 2005 ACS on STN
 142:248426 Preparation method of surface-treated **fluorescent**
 substance for low voltage. Lee, Su Jeong; Park, Seon Yeong (Samsung
 SDI Co., Ltd., S. Korea). Repub. Korean Kongkae Taeho Kongbo KR
 2003059429 A 20030710, No pp. given (Korean). CODEN: KRXXA7.

- APPLICATION: KR 2001-88290 20011229.
- AB A surface-treated **fluorescent** substance for a low voltage, its preparation method, and a **display device** obtained by using the **fluorescent** substance are provided to improve the luminance by treating the surface of the **fluorescent** substance with a silicate. The surface-treated **fluorescent** substance is a **fluorescent** substance with silicate adhered to its surface, wherein the silicate is **aluminum** silicate, gallium silicate, titanium silicate, thallium silicate, lanthanum silicate, or boron silicate. The content of the silicate is 0.01-10 weight% based on the amount of the **fluorescent** substance. Preferably the **fluorescent** substance is represented by ZnS:Cu,Al in the case of a **red light emitting** **fluorescent** substance, ZnS:Ag,Cl in the case of a **blue light emitting** **fluorescent** substance and Y2O2S:Eu in the case of a **red light emitting** **fluorescent** substance. The method comprises the steps of adding water and silicate of an alkali or alkaline earth metal to a **fluorescent** substance for a low voltage, and dispersing them by stirring; and adding a metal salt solution to the obtained solution and dispersing the solution by stirring. Preferably the silicate of an alkali or alkaline earth metal is K2SiO3.
- IC ICM C09K011-59
- CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
- Section cross-reference(s): 49
- ST surface treated **fluorescent** substance low voltage prepn method thereof
- IT **Fluorescent** substances
Surface treatment
(**fluorescent** substance for low voltage surface treated with silicate)
- IT Silicates, uses
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(**fluorescent** substance for low voltage surface treated with silicate)
- IT Optical imaging devices
(**fluorescent** substance for low voltage surface treated with silicate for use in)
- IT 1314-98-3, Zinc sulfide, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(doped; **fluorescent** substance for low voltage surface treated with silicate)
- IT 12340-04-4, Yttrium oxide sulfide (Y2O2S)
RL: TEM (Technical or engineered material use); USES (Uses)
(europium-doped; **fluorescent** substance for low voltage surface treated with silicate)
- IT 1335-30-4, **Aluminum** silicate 10006-28-7 12676-29-8,
Boron silicate 12789-51-4, Thallium silicate 42613-21-8,
Titanium silicate 68136-20-9, Lanthanum silicate 101028-06-2,
Gallium silicate

RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (fluorescent substance for low voltage surface treated with silicate)

IT 7440-53-1, Europium, uses
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (yttrium oxide sulfide doped with; fluorescent substance for low voltage surface treated with silicate)

IT 7429-90-5, Aluminum, uses 7440-22-4, Silver,
 uses 7440-50-8, Copper, uses 22537-15-1,
 Atomic chlorine, uses
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (zinc sulfide doped with; fluorescent substance for low voltage surface treated with silicate)

L87 ANSWER 2 OF 37 HCA COPYRIGHT 2005 ACS on STN
 142:102790 **Phosphor** of field emission **display**
device and method of treating surface of the **phosphor**. Han, Si Uk; Jung, Tae Yeong; Kim, Sang Mun (Lg Electronics Inc., S. Korea). Repub. Korean Kongkae Taeho Kongbo KR 2001068581 A 20010723, No pp. given (Korean). CODEN: KRXXA7.
 APPLICATION: KR 2000-571 20000107.

AB A **phosphor** for a field emission **display**
device and method of treating the surface of the **phosphor** are provided to prevent the degradation of the **phosphor**. A field emission **display device** includes an oxide **red phosphor** deposited on an anode to form a screen. The **phosphor** of perovskite group is coated on the surface of the **phosphor** by performing a surface conditioning process. The **phosphor** of perovskite group is MTiO₃:Pr,X (M = Sr, Ca, Ba; X = Al, Ga). The Pr is used as 0.05 or 0.5 mol% and the X is used as 0.01 or 0.5 mol%. Also, metal alkoxides are absorbed on the surface of the **phosphor** and baked with the surface conditioning process.

IC ICM H01J009-20

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST surface treatment **phosphor** perovskite field emission **display device**

IT Field emission displays
 Perovskite-type crystals
Phosphors
 Surface treatment
 (surface treatment of **phosphor** perovskites of field emission **display device** to prevent degradation)

IT Metal alkoxides
 RL: MOA (Modifier or additive use); USES (Uses)
 (surface treatment of **phosphor** perovskites of field emission **display device** to prevent degradation)

with)

IT 7429-90-5, Aluminum, uses 7440-55-3, Gallium,
uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
(alkaline earth metal titanates doped with; surface treatment of
phosphor perovskites of field emission **display**
device to prevent degradation)

IT 12047-27-7, Barium titanate (BaTiO₃), uses 12049-50-2, Calcium
titanate (CaTiO₃) 12060-59-2, Strontium
titanate (SrTiO₃)
RL: DEV (Device component use); PEP (Physical, engineering or
chemical process); PYP (Physical process); PROC (Process); USES
(Uses)
(aluminum and gallium **doped**; surface
treatment of **phosphor** perovskites of field emission
display device to prevent degradation)

L87 ANSWER 3 OF 37 HCA COPYRIGHT 2005 ACS on STN
141:182062 Color **cathode ray tube** showing
improved white uniformity. Chikusa, Hisashi (Toshiba Corp., Japan).
Jpn. Kokai Tokkyo Koho JP 2004220800 A2 20040805, 8 pp.
(Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-3288 20030109.

AB In a color **cathode ray tube** having a
red phosphor layer, a **green**
phosphor layer, and a **blue phosphor** layer, the
red phosphor layer contains a specified amount of a
blue phosphor so that the improved white uniformity can be
obtained.

IC ICM H01J029-20
ICS C09K011-00; C09K011-08; H01J009-227

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and
Other Reprographic Processes)
Section cross-reference(s): 73

ST color **cathode ray tube** blue
phosphor additive white uniformity

IT **Phosphors**
(blue-emitting; color **cathode ray**
tube having blue emitting **phosphor** additive in
red phosphor layer to improve white uniformity)

IT **Cathode ray tubes**
(color; color **cathode ray tube**
having blue emitting **phosphor** additive in **red**
phosphor layer to improve white uniformity)

IT 1314-98-3D, Zinc sulfide, Ag- and
Al-doped
RL: MOA (Modifier or additive use); USES (Uses)
(blue emitting **phosphor**; color **cathode**
ray tube having blue emitting **phosphor**
additive in **red phosphor** layer to improve
white uniformity)

IT 12340-04-4D, Yttrium oxide sulfide (Y₂O₂S), Eu-doped
RL: DEV (Device component use); USES (Uses)

(red emitting phosphor; color cathode ray tube having blue emitting phosphor additive in red phosphor layer to improve white uniformity)

L87 ANSWER 4 OF 37 HCA COPYRIGHT 2005 ACS on STN
 141:30824 Luminophore of luminous hot colors and fluorescent display device. Hamada, Takuya; Itakura, Kazuhiko; Shiraga, Takao; Kitagawa, Kazunori; Takanashi, Hirokazu; Toki, Hitoshi (Futaba Corporation, Japan). Fr. Demande FR 2847904 A1 20040604, 25 pp. (French). CODEN: FRXXBL.
 APPLICATION: FR 2003-14084 20031201. PRIORITY: JP 2002-349809 20021202.

AB A mixture of **luminophores** is provided by mixing a **luminophore** of a **luminous red color** deprived of Cd with a **luminophore** of a **luminous color** of the family of the **greens** also deprived of Cd, the **luminous color** of the mixture of **luminophores** being a hot color, i.e. **yellow to orange**. Also, in the mixture of **luminophores**, the component S either is removed completely or in less quantity compared to the traditional **luminophores** with **luminous hot colors**. Consequently, it does not appear a dark line or the duration at the end of which this dark line appears can be delayed, which makes it possible to have a device with **fluorescent** posting with vacuum with a bill-poster of better quality.

IC ICM C09K011-67

ICS H01J029-20; H01J001-63

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **luminophor display device;**
fluorescent display device
luminophor; strontium titanate
luminophor display device; cadmium
zinc sulfide luminophor display
device; gallium zinc oxide
luminophor display device

IT **Phosphors**
 (green-emitting; **luminophore of**
luminous hot colors and fluorescent
display device)

IT **Electroluminescent devices**
Phosphors
 (**luminophore of luminous hot colors and**
fluorescent display device)

IT **Phosphors**
 (orange-emitting; **luminophore of**
luminous hot colors and fluorescent
display device)

IT **Phosphors**
 (red-emitting; **luminophore of**
luminous hot colors and fluorescent
display device)

IT **Phosphors**
 (yellow-emitting; **luminophore** of
 luminous hot colors and **fluorescent**
display device)

IT **7439-96-5, Manganese**, properties
 RL: DEV (Device component use); MOA (Modifier or additive use); PRP
 (Properties); USES (Uses)
 (**Mn-doped gallium zinc**
oxide; **luminophore** of luminous hot
 colors and **fluorescent display device**
 containing)

IT **12064-18-5, Gallium zinc oxide**
 ga2zno4
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (**Mn-doped gallium zinc**
oxide; **luminophore** of luminous hot
 colors and **fluorescent display device**
 containing)

IT **7429-90-5, Aluminum**, properties **7440-10-0**
 , **Praseodymium**, properties **7440-50-8**,
Copper, properties **7440-57-5**, **Gold**,
 properties
 RL: DEV (Device component use); MOA (Modifier or additive use); PRP
 (Properties); USES (Uses)
 (**luminophore** of luminous hot colors and
fluorescent display device containing)

IT **1314-98-3, Zinc monosulfide**, properties
12060-59-2, Strontium titanate
12442-27-2, Cadmium zinc sulfide ((Cd,Zn)S)
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (**luminophore** of luminous hot colors and
fluorescent display device containing)

L87 ANSWER 5 OF 37 HCA COPYRIGHT 2005 ACS on STN
 140:431089 **Yellow ZnS-based phosphor**,
 process of preparing the same, and **display device**
 using the **phosphor**. Lee, Sanghyuk; Shin, Sanghoon; You,
 Yongchan; Jeong, Joayoung (Samsung SDI Co., Ltd., S. Korea). U.S.
 Pat. Appl. Publ. US 2004100185 A1 20040527, 7 pp. (English).
 CODEN: USXXCO. APPLICATION: US 2003-368385 20030220. PRIORITY: KR
 2002-74357 20021127.

AB A **yellow ZnS-based phosphor** having
 improved color coordinates and **luminance** for use in
 intermediate- and low-voltage **display devices**
 using improved activators and coactivators has color coordinates (x,
 y) shifting to a **yellow** emission as the amount of an
 activator is increased. Therefore, the **ZnS: (Au**
 or **Cu**), In **phosphor** can be advantageously used
 for various display applications including vacuum
fluorescent displays (VFDs) and field emission displays
 (FEDs).

IC ICM H01J001-62

NCL 313496000; 252301400R; 252301600R

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

ST **yellow zinc sulfide phosphor**
copper gold doped display
device

IT Field emission displays
 Optical imaging devices

Phosphors

(**yellow ZnS-based phosphor** and
 process of its preparation and **display device**
 based on it)

IT **7439-96-5, Manganese**, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(**yellow ZnS-based phosphor** and
 process of its preparation and **display device**
 based on it)

IT **7440-50-8, Copper**, properties **7440-57-5**,

Gold, properties **7440-74-6**, **Indium**, properties

RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); USES (Uses)

(**yellow ZnS-based phosphor** and
 process of its preparation and **display device**
 based on it)

IT **1314-98-3, Zinc sulfide**, uses

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(**yellow ZnS-based phosphor** and
 process of its preparation and **display device**
 based on it)

IT 1312-43-2, Indium sesquioxide 10294-68-5, Indium sulfate

nonahydrate 25721-32-8

RL: RCT (Reactant); RACT (Reactant or reagent)

(**yellow ZnS-based phosphor** and
 process of its preparation and **display device**
 based on it)

L87 ANSWER 6 OF 37 HCA COPYRIGHT 2005 ACS on STN

140:67691 An improved process for the preparation of **copper**

and aluminum activated **zinc cadmium**

sulfide phosphors for use in color

television picture tubes as green

component. Vasu, Kailathuvalappil Inniri; Rao, Ravilisetty

Padmanabha; Jagannthan, Rangarajan (Council of Scientific &

Industrial, India). Indian IN 180365 A 19980124, 16 pp.

(English). CODEN: INXXAP. APPLICATION: IN 1991-DE37 19910117.

AB The invention relates to an improved process for the preparation of **copper** and aluminum activated **zinc**

cadmium sulfide phosphors having the conceal

formula $(Zn_{1-x-y-z}Cd_x)S:C_ey, Al_2$ where Zn and Cd are in the preparation of $1-x-y-z:x$ when the value representing x ranges from 0.10% and the value of y&z ranges from 0.01-0.1% by weight which comprises mixing 99

to 90 parts by weight of **zinc sulfide** with 1 to 10 parts by weight of cadmium sulfide, adding **copper** and **aluminum** in the range of 0.01 to 0.1% by weight of the above mixture in the form of **copper** salt selected from chloride of sulfate and **aluminum** salt selected from nitrate or chloride, adding alkali halide flux such as KCl, NaF in the range of 2 to 10% by weight of the above mixture blending, the range of 900 to 1100°C, for a period of 1-2 h in the absence of oxygen.

IC ICM C22C018-00

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST TV prepn **copper aluminum zinc cadmium sulfide phosphor**

IT Television tubes

(color; improved process for preparation of **copper** and **aluminum** activated **zinc cadmium sulfide phosphors** for use in color **television** picture tubes as **green** component)

IT Phosphors

(improved process for preparation of **copper** and **aluminum** activated **zinc cadmium sulfide phosphors** for use in color **television** picture tubes as **green** component)

IT 7429-90-5, Aluminum, uses 7440-50-8,

Copper, uses

RL: MOA (Modifier or additive use); USES (Uses)
(dopant; **phosphors** for color **television** picture tubes)

IT 1306-23-6, Cadmium sulfide, uses 1314-98-3, Zinc

sulfide, uses 7647-14-5, Sodium chloride, uses 7758-98-7, **Copper** sulfate, uses 13473-90-0,

Aluminum nitrate 108915-65-7D, **Copper**

zinc sulfide ((Cu,Zn)S

), doped with Cu and Al

RL: TEM (Technical or engineered material use); USES (Uses)
(**phosphors** for color **television** picture tubes)

L87 ANSWER 7 OF 37 HCA COPYRIGHT 2005 ACS on STN

139:187570 Luminescence enhancement of ZnGa₂O₄: Mn²⁺

by Ge⁴⁺ and Li⁺ doping. Kim, J. S.; Park, H. L.; Kim, G. C.; Kim, T. W.; Hwang, Y. H.; Kim, H. K.; Mho, S. I.; Han, S. D. (Institute of Physics and Applied Physics, Yonsei University, Seoul, 120-749, S. Korea). Solid State Communications, 126(9), 515-518 (English) 2003. CODEN: SSCOAA. ISSN: 0038-1098. Publisher: Elsevier Science Ltd..

AB Structural and optical properties of ZnGa₂O₄:Ge⁴⁺ and ZnGa₂O₄:Ge⁴⁺, Li⁺, Mn²⁺ **phosphors** were studied by using XRD, photoluminescence (PL) and cathodoluminescence (CL) measurements. The XRD patterns show that Ge-doped ZnGa₂O₄ has a spinel phase and its lattice constant increases with respect to ZnGa₂O₄. Emission wavelength shifts from 400 to 360 nm in comparison with ZnGa₂O₄ when Ge is doped in

ZnGa₂O₄ and a peak related with O defect was observed in Ge-doped **ZnGa₂O₄**. The CL luminance of **ZnGa₂O₄:Ge⁴⁺, Li⁺, Mn²⁺ phosphors** is seven times brighter than that of **ZnGa₂O₄:Mn²⁺**. This drastic luminance improvement can be attributed to Ge doping in **ZnGa₂O₄** acting as donor ion and Li doping resulting in increasing conductivity of **ZnGa₂O₄**. **ZnGa₂O₄:Ge⁴⁺, Li⁺, Mn²⁺ phosphors** hold promise for potential applications in field-emission **display devices** with high brightness operating in **green** spectral regions.

- CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
- ST luminescence manganese germanium lithium
doping gallium zinc oxide
- IT Cathodoluminescence
Doping
 Luminescence
X-ray diffraction
X-ray scattering
 (luminescence enhancement of **ZnGa₂O₄:Mn²⁺** by Ge⁴⁺ and Li⁺ doping)
- IT Photoexcitation
 (spectra; luminescence enhancement of **ZnGa₂O₄:Mn²⁺** by Ge⁴⁺ and Li⁺ doping)
- IT 7439-93-2, Lithium, properties **7439-96-5**,
Manganese, properties 7440-56-4, Germanium, properties
16065-84-2, Germanium(4+), properties 16397-91-4,
Manganese(2+), properties 17341-24-1, Lithium(1+),
properties
RL: PRP (Properties)
 (Ga₂ZnO₄ doped with; luminescence enhancement of **ZnGa₂O₄:Mn²⁺** by Ge⁴⁺ and Li⁺ doping)
- IT **12064-18-5**, Gallium zinc oxide
(Ga₂ZnO₄)
RL: PRP (Properties)
 (dopants effect on; luminescence enhancement of **ZnGa₂O₄:Mn²⁺** by Ge⁴⁺ and Li⁺ doping)

L87 ANSWER 8 OF 37 HCA COPYRIGHT 2005 ACS on STN

139:171383 **Cathode-ray tube** using

phosphor with prolonged life for projector in television.
Igarashi, Takahiro; Kusunoki, Tsuneo; Ono, Katsutoshi (Sony Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2003234075 A2 20030822, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-31192 20020207.

AB The **cathode-ray tube** has a light emission layer made of (a) blue light-emitting Ag- and Al-doped ZnS particles, (b) **green** light-emitting Tb-doped Y₂SiO₅ particles, and/or (c) **red** light-emitting Eu-doped Y₂O₃ with particle diameter 5-7 μm on a **fluorescent** layer. The **phosphors**, showing prolonged life, provide the TV projector with reduced electron beam size spots without browning of the **cathode-**

IC ray tube walls.
 ICM H01J031-10
 ICS C09K011-08; C09K011-56; C09K011-78; C09K011-79; H01J029-20
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 73
 ST cathode ray tube fluorescent
 layer phosphor; long life phosphor
 cathode ray tube; television projector
 cathode ray tube; silver
 aluminum doped zinc sulfide
 phosphor; terbium doped yttrium silicon oxide
 phosphor; europium doped yttrium oxide phosphor
 IT Cathode ray tubes
 Projection apparatus
 Television
 (cathode-ray tube using
 electroluminescent phosphor with prolonged life for
 projector in television)
 IT Phosphors
 (electroluminescent; cathode-ray tube
 using electroluminescent phosphor with prolonged life
 for projector in television)
 IT 7429-90-5, Aluminum, uses 7440-22-4, Silver,
 uses 7440-27-9, Terbium, uses 7440-53-1, Europium, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (dopant; cathode-ray tube using
 electroluminescent phosphor containing)
 IT 1314-36-9, Yttrium oxide (Y2O3), uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (europium-doped; cathode-ray tube
 using electroluminescent phosphor with prolonged life
 for projector in television)
 IT 1314-98-3, Zinc sulfide, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (silver- and aluminum-doped; cathode-
 ray tube using electroluminescent
 phosphor with prolonged life for projector in television)
 IT 12027-88-2, Silicon yttrium oxide (SiY2O5)
 RL: TEM (Technical or engineered material use); USES (Uses)
 (terbium-doped; cathode-ray tube
 using electroluminescent phosphor with prolonged life
 for projector in television)

L87 ANSWER 9 OF 37 HCA COPYRIGHT 2005 ACS on STN

136:285971 Thin ZnS:Cu,Ga and ZnO:Cu,Ga
 film phosphors. Kryshtab, T. G.; Khomchenko, V. S.;
 Papusha, V. P.; Mazin, M. O.; Tzyrkunov, Yu. A. (Department of
 Material Sciences, ESFM-Institute Polytechnic National, U.P.A.L.M.,
 Mexico City, 07738, Mex.). Thin Solid Films, 403-404, 76-80
 (English) 2002. CODEN: THSFAP. ISSN: 0040-6090. Publisher:
 Elsevier Science S.A..

AB A new technique for electro- and cathodoluminescent screen

fabrication with the application of a new method of **doping** **ZnS:Cu** and **ZnO:Cu** thin film **phosphors** is proposed. Thin films of **ZnS:Cu** were grown by electron-beam evaporation (EBE) from a **ZnS:Cu** target on substrates heated to 150-200°, and the **Cu** concentration in the target was varied from 0.06 to 0.25 weight %. **BaTiO₃** and sapphire single crystal substrates were used. The film thickness varied from 0.6 to 9 μm . Parameters of **ZnS:Cu** films grown by EBE were modified using non-vacuum annealing at 700-1000° in S₂-rich or O₂-rich atmospheric both with and without Ga co-doping. The measurement of electroluminescent (EL) and cathodoluminescent (CL) parameters, as well as XRD techniques and atomic force microscopy (AFM) were used for this research. The EL **ZnS:Cu,Ga** blue color emission film with a luminance of 30 cd/m² and **green** (**yellow**) color emission film with a luminance of 800 cd/m² were obtained. Devices with such films have a threshold voltage of 10 V. The CL luminance was 200 cd/m² for **ZnS:Cu,Ga** and 1100 cd/m² for **ZnO:Cu,Ga** films at 300 K and 3700 cd/m² for **ZnO:Cu,Ga** films at 77 K. The films show a deeper **green** color than com. **phosphors**. Clarification that Ga co-doping affects the luminance, since Ga influences on recrystn. process, was carried out.

- CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
- ST **copper gallium doped zinc oxide sulfide film phosphor**
- IT **Electroluminescent devices**
 (displays; thin **ZnS:Cu,Ga** and **ZnO:Cu,Ga** film **phosphors**)
- IT Annealing
 (effect of; thin **ZnS:Cu,Ga** and **ZnO:Cu,Ga** film **phosphors**)
- IT **Luminescent screens**
 (electroluminescent; thin **ZnS:Cu,Ga** and **ZnO:Cu,Ga** film **phosphors**)
- IT Cathodoluminescence
 Cathodoluminescent screens
 Electron beam evaporation
 Luminescence, electroluminescence
 Phosphors
 Surface structure
 X-ray diffraction
 (thin **ZnS:Cu,Ga** and **ZnO:Cu,Ga** film **phosphors**)
- IT 7782-44-7, Oxygen, occurrence
 RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
 (annealing in atmospheric rich in; thin **ZnS:Cu,Ga** and **ZnO:Cu,Ga** film **phosphors**)
- IT 1344-28-1, Alumina, uses
 RL: NUU (Other use, unclassified); USES (Uses)

- (sapphire substrate; thin ZnS:Cu,Ga and ZnO:Cu,Ga film **phosphors**)
- IT 12047-27-7, Barium titanate, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (substrate; thin ZnS:Cu,Ga and ZnO:Cu,Ga film **phosphors**)
- IT 7440-50-8, Copper, properties 7440-55-3,
 Gallium, properties
 RL: MOA (Modifier or additive use); PEP (Physical, engineering or
 chemical process); PRP (Properties); PYP (Physical process); PROC
 (Process); USES (Uses)
 (thin ZnS:Cu,Ga and ZnO:Cu,Ga film **phosphors**)
- IT 7704-34-9, Sulfur, occurrence
 RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
 (thin ZnS:Cu,Ga and ZnO:Cu,Ga film **phosphors**)
- IT 1314-13-2, Zinc oxide, properties 1314-98-3, Zinc
 sulfide, properties
 RL: PEP (Physical, engineering or chemical process); PRP
 (Properties); PYP (Physical process); PROC (Process)
 (thin ZnS:Cu,Ga and ZnO:Cu,Ga film **phosphors**)

L87 ANSWER 10 OF 37 HCA COPYRIGHT 2005 ACS on STN

135:233257 Luminescent mechanisms of ZnS:Cu

:Cl and ZnS:Cu:Al **phosphors**.

Chen, Y. Y.; Duh, J. G.; Chiou, B. S.; Peng, C. G. (Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, 30043, Taiwan). Thin Solid Films, 392(1), 50-55 (English) 2001. CODEN: THSFAP. ISSN: 0040-6090. Publisher: Elsevier Science S.A..

AB ZnS:Cu:Cl and ZnS:Cu:

Al phosphors are fabricated by a flux fusion method to be used in **cathode ray tube** (CRT) monitors for **green** emission. The emission spectra of the **phosphors** depend on the **Cu** concentration. Luminescence measurements were conducted, and several models are applied to explain the **luminescent** phenomenon of these **phosphors**. **ZnS:Cu:Cl** and the **ZnS:Cu:Al phosphors** exhibit **green** emission yet their **luminescence** mechanisms are different. The emission spectrum from the as-fabricated **green phosphors** is not a typical Gaussian distribution. The combination of blue and **green** band luminescence is attributed to the **green-luminescence** quenching derived from the interstitial **Cu⁺** ions.

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

ST **zinc sulfide phosphor copper**
aluminum chlorine cathodoluminescence quenching EPR;

- cathode ray tube phosphor
zinc sulfide copper aluminum
chlorine
- IT Cathodoluminescence
ESR (electron spin resonance)
Interstitials
Luminescence quenching
Phosphors
(luminescent mechanisms of ZnS:Cu
:Cl and ZnS:Cu:Al phosphors
)
- IT 1314-98-3, Zinc sulfide, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(doped with copper and either
aluminum or chlorine; luminescent mechanisms of
ZnS:Cu:Cl and ZnS:Cu:
Al phosphors)
- IT 7440-50-8, Copper, properties 17493-86-6,
Copper(1+), properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(zinc sulfide containing aluminum or
chlorine and; luminescent mechanisms of ZnS:
Cu:Cl and ZnS:Cu:Al
phosphors)
- IT 7429-90-5, Aluminum, properties 7782-50-5,
Chlorine, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(zinc sulfide containing copper and;
luminescent mechanisms of ZnS:Cu:Cl
and ZnS:Cu:Al phosphors)

L87 ANSWER 11 OF 37 HCA COPYRIGHT 2005 ACS on STN

132:56896 Fluorescent light-emitting (display) device using indium titanium oxide.
Nomura, Hiroshi; Namikawa, Mamoru; Naito, Yasuyuki (Futaba Denshi Kogyo Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 11354046 A2 19991224 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-159227 19980608.

AB The device has a transparent substrate, an amorphous ITO film as an anode formed on the inner surface of the substrate, and a fluorescent material layer on the anode and the ITO film thickness is fixed so that the peaks of spectroscopic transmission of the ITO film and the peaks of emission spectrum of the fluorescent material are substantially the same.
Alternatively, the color display device has a red light-emitting fluorescent material layer associated with a 1500-Å bottom amorphous ITO layer, a blue light-emitting layer with a 1000-Å bottom amorphous ITO layer, and a green light-emitting layer associated with a 1250-Å bottom amorphous ITO layer.

IC ICM H01J029-18
ICS C09K011-54; C09K011-62; C09K011-67; C09K011-79; H01J029-20;

H01J029-32; H01J031-12

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

ST **fluorescent light emitting color**
display device; amorphous ITO anode film thickness
display

IT Electrodeposits

(anodic; **fluorescent light-emitting**
(display) device with amorphous indium tin
oxide anode layer with specified thickness)

IT **Fluorescent substances**

(**fluorescent light-emitting** (bracketed)
(display) device with amorphous indium tin oxide
anode layer with specified thickness)

IT **Electrooptical imaging devices**

(**fluorescent; fluorescent light-**
emitting (display) device with
amorphous indium tin oxide anode layer with specified thickness)

IT 12027-88-2, Silicon yttrium oxide (SiY2O5)

RL: DEV (Device component use); USES (Uses)

(cesium-doped; **fluorescent light-**
emitting (display) device with
amorphous indium tin oxide anode layer with specified thickness)

IT 50926-11-9, ITO

RL: DEV (Device component use); USES (Uses)

(**fluorescent light-emitting** (bracketed)
(display) device with amorphous indium tin oxide
anode layer with specified thickness)

IT 7439-96-5, **Manganese**, uses

RL: MOA (Modifier or additive use); USES (Uses)

(**gallium zinc oxide doped**
with; **fluorescent light-emitting** (bracketed)
(display) device with amorphous indium tin oxide
anode layer with specified thickness)

IT 12064-18-5, Zinc gallium oxide

(ZnGa2O4)

RL: DEV (Device component use); USES (Uses)

(**manganese-doped; fluorescent**
light-emitting (display)
device with amorphous indium tin oxide anode layer with
specified thickness)

IT 12060-59-2, Strontium titanium oxide (SrTiO3)

RL: DEV (Device component use); USES (Uses)

(**praseodymium-doped; fluorescent**
light-emitting (display)
device with amorphous indium tin oxide anode layer with
specified thickness)

IT 7440-10-0, **Praseodymium**, uses

RL: MOA (Modifier or additive use); USES (Uses)

(**strontium titanium oxide doped**
with; **fluorescent light-emitting** (bracketed)
(display) device with amorphous indium tin oxide

anode layer with specified thickness)

IT 7440-46-2, Cesium, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (yttrium silicon oxide doped with; **fluorescent light-emitting (display)**
 device with amorphous indium tin oxide anode layer with
 specified thickness)

IT 7440-66-6, Zinc, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (zinc oxide doped with; **fluorescent light-emitting (display)** device with
 amorphous indium tin oxide anode layer with specified thickness)

IT 1314-13-2, Zinc oxide, uses
 RL: DEV (Device component use); USES (Uses)
 (zinc-doped; **fluorescent light-emitting (display)** device with
 amorphous indium tin oxide anode layer with specified thickness)

L87 ANSWER 12 OF 37 HCA COPYRIGHT 2005 ACS on STN

130:73619 **Phosphor** compositions including bismuth vanadate pigments and color **television screens** with coatings including them. Bredol, Michael; Mingers, Andrea (Philips Patentverwaltung G.m.b.H., Germany). Ger. DE 19733584 C1 19981210, 6 pp. (German). CODEN: GWXXAW. APPLICATION: DE 1997-19733584 19970802.

AB **Phosphor** compns. are described which include a green-emitting **phosphor** and a BiVO₄ pigment. Color **television screens** with coatings including the compns. are also described. The **television screen** coating may also include V2O₅. The pigment may be present as a coating on the **phosphor** particles.

IC ICM H01J029-20
 ICS C09K011-08; C09K011-69; C09K011-74

ICA H01J031-20

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

ST bismuth vanadate pigment **phosphor** coating compn; color television **phosphor** coating compn

IT **Phosphors**
 (green-emitting; **phosphor** compns. including bismuth vanadate pigments and color **television screens** with coatings including them)

IT Cathodoluminescent screens
 (**phosphor** compns. including bismuth vanadate pigments and color **television screens** with coatings including them)

IT 1314-98-3, Zinc sulfide, uses
 RL: DEV (Device component use); USES (Uses)
 (green-emitting **phosphors** based on;
phosphor compns. including bismuth vanadate pigments and color **television screens** with coatings including them)

- IT 1314-62-1, Vanadium pentoxide, uses
 RL: DEV (Device component use); USES (Uses)
 (phosphor compns. including bismuth vanadate pigments and color television screens with coatings including them)
- IT 14059-33-7P, Bismuth vanadate (BiVO₄)
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (phosphor compns. including bismuth vanadate pigments and color television screens with coatings including them)
- IT 5588-84-1, Vanadyl triisopropoxide 7787-60-2, Bismuth trichloride
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (phosphor compns. including bismuth vanadate pigments and color television screens with coatings including them)
- IT 7429-90-5, Aluminum, uses 7440-50-8,
 Copper, uses 7440-57-5, Gold, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (zinc sulfide doped with; phosphor compns. including bismuth vanadate pigments and color television screens with coatings including them)

L87 ANSWER 13 OF 37 HCA COPYRIGHT 2005 ACS on STN

130:8940 Color cathode-ray tube. Kato, Hiroshi; Tsuchiya, Masami (Sony Corp., Japan). Jpn. Kokai Tokkyo Koho JP 10283946 A2 19981023 Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-92449 19970410.

AB The color cathode-ray tube uses a green phosphor made from Mn-doped Zn₂SiO₄ and Cu- and Al-doped Zn₂SiO₄ containing rare earth elements. The phosphor exhibited excellent brightness saturation characteristic.

IC ICM H01J029-20

CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 76

ST color cathode ray tube
 phosphor

IT Cathode ray tubes
 Phosphors
 (green phosphor for color cathode-ray tube)

IT 1314-98-3, Zinc sulfide, uses 13597-65-4, Zinc silicate (Zn₂SiO₄)
 RL: DEV (Device component use); USES (Uses)
 (green phosphor for color cathode-ray tube)

IT 7429-90-5, Aluminum, uses 7439-96-5,
 Manganese, uses 7440-50-8, Copper, uses
 RL: MOA (Modifier or additive use); USES (Uses)

(green phosphor for color cathode-ray tube)

- L87 ANSWER 14 OF 37 HCA COPYRIGHT 2005 ACS on STN
 127:154418 Manufacture of **green-emitting phosphor**
 for excitation by low-speed electron beam. Oshima, Hidenori
 (Noritake Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 09194834 A2
 19970729 Heisei, 12 pp. (Japanese). CODEN: JKXXAF. APPLICATION:
 JP 1996-6397 19960118.
- AB The manufacturing method involves a process of dispersing a **Mn** compound activator into $ZnO \cdot Ga_2O_3$ in a reducing atmospheric at 800-1000°. The obtained **phosphor** may be annealed in an inactive atmospheric at 650-950° after the above process. The **phosphor** is useful for **fluorescent display tubes**. The **phosphor** shows high **luminance** at its initial emitting.
- IC ICM C09K011-62
 ICS C09K011-08
- CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
- ST **zinc gallium oxide manganese activator phosphor; thermal redn zinc gallium oxide phosphor; green emitting zinc gallium oxide phosphor**
- IT Cathode ray tubes
Phosphors
 (doping of manganese into gallium zinc oxide phosphor by thermal reduction for high initial luminance)
- IT Reduction
 (thermal; doping of manganese into gallium zinc oxide phosphor by thermal reduction for high initial luminance)
- IT 7439-96-5, **Manganese**, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (doping of manganese into gallium zinc oxide phosphor by thermal reduction for high initial luminance)
- IT 12064-18-5P, **Gallium zinc oxide**
 (Ga_2ZnO_4)
 RL: DEV (Device component use); PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (doping of manganese into gallium zinc oxide phosphor by thermal reduction for high initial luminance)
- IT 7785-87-7, **Manganese sulfate**
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (doping of manganese into gallium zinc oxide phosphor by thermal reduction for high initial luminance)

L87 ANSWER 15 OF 37 HCA COPYRIGHT 2005 ACS on STN
 124:328027 **Green-emitting phosphor mixture.** Park,
 Chang-won; Yang, Jun-mo; Lee, Joon-bae (Samsung Display Devices Co.,
 Ltd., S. Korea). Ger. Offen. DE 19517165 A1 19960418, 6 pp.
 (German). CODEN: GWXXBX. APPLICATION: DE 1995-19517165 19950510.
 PRIORITY: KR 1994-26118 19941012.

AB **Green-emitting phosphor mixts.** comprise InBO₃:Tb
 with ZnS:Cu,Au,Al or
 ZnS:Cu,Al. The mixture may optionally
 also include Zn₂SiO₄:Mn. **Cathode-ray**
tubes employing the mixts. are also described.

IC ICM H01J029-20
 ICS H01J031-20; C09K011-08

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related
 Properties)

Section cross-reference(s): 74

ST **cathode ray tube green**
phosphor mixt; indium borate **zinc sulfide**
phosphor mixt

IT **Phosphors**
 (green-emitting, **green-emitting**
phosphor mixts. for **cathode-ray**
tubes)

IT 7439-96-5, **Manganese**, uses 7440-27-9, Terbium,
 uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)
 (activator; **green-emitting phosphor** mixts.
 for **cathode-ray tubes**)

IT 1314-98-3, **Zinc sulfide**, uses
 RL: DEV (Device component use); USES (Uses)
 (green-emitting **phosphor** mixts. for
cathode-ray tubes)

IT 13709-93-8, Indium borate (InBO₃)
 RL: DEV (Device component use); USES (Uses)
 (terbium-activated; **green-emitting phosphor**
 mixts. for **cathode-ray tubes**)

IT 7429-90-5, **Aluminum**, uses 7440-50-8,
Copper, uses 7440-57-5, **Gold**, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)
 (**zinc sulfide doped with**;
green-emitting phosphor mixts. for
cathode-ray tubes)

L87 ANSWER 16 OF 37 HCA COPYRIGHT 2005 ACS on STN

122:20060 **Color cathode-ray tubes.**

Onodera, Makoto; Takahashi, Yoshinori; Wakatsuki, Tadashi; Oikawa,
 Mitsuhiro (Tokyo Shibaura Electric Co, Japan). Jpn. Kokai Tokkyo
 Koho JP 06103915 A2 19940415 Heisei, 11 pp. (Japanese). CODEN:
 JKXXAF. APPLICATION: JP 1991-239869 19910919.

AB The **phosphor** screens of the tubes contain **green**,
red, and blue **phosphor** pixel layers; the

green phosphor comprises Cu-activated
 ZnS particles coated with a blue pigment containing TiO₂, CoO,
 Al₂O₃ and Li₂O.

IC ICM H01J029-20
 ICS C09K011-08; C09K011-56; H01J029-18

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST color CRT pigment coated phosphor particle;
 zinc sulfide phosphor blue pigment
 CRT; oxide pigment zinc sulfide
 phosphor

IT Phosphors
 (green-emitting, blue pigment-coated green
 -emitting CRT phosphors)

IT 1307-96-6, Cobalt oxide (CoO), uses 1344-28-1, Aluminum
 oxide (Al₂O₃), uses 12057-24-8, Lithium oxide (Li₂O), uses
 13463-67-7, Titanium oxide (TiO₂), uses 159704-07-1, Daipyroxide
 Sky Blue 9418
 RL: DEV (Device component use); USES (Uses)
 (blue pigment-coated green-emitting CRT
 phosphors)

IT 1314-98-3, Zinc sulfide, uses
 RL: DEV (Device component use); USES (Uses)
 (copper-doped; blue pigment-coated
 green-emitting CRT phosphors)

IT 7440-50-8, Copper, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)
 (dopant; blue pigment-coated green-emitting CRT
 phosphors)

L87 ANSWER 17 OF 37 HCA COPYRIGHT 2005 ACS on STN
 121:94937 Emission color tuning of green emitting Zns
 -based CRT phosphors. Bredol, M.; Merikhi, J.;
 Koehler, I.; Bechtel, H.; Czarnojan, W. (Philips
 Forschungslaboratorien/Aachen, Aachen, D-52021, Germany). Journal
 of Solid State Chemistry, 110(2), 250-5 (English) 1994. CODEN:
 JSSCBI. ISSN: 0022-4596.

AB ZnS:Cu,Au,Al; ZnS:
 Cu,Al and (Zn,Cd)S:Cu
 ,Al are the most important green emitting
 phosphors for cathode ray tube
 applications. The latter one contains (toxic) cadmium and therefore
 tends to be eliminated from tube production whenever possible. Alloying
 with CdS is applied to control the emission color over a very large
 range. This work shows how the emission color of the Cd-free
 phosphors can be tuned as well, at least over the region of
 interest for the green primary of color TV. Tuning
 mechanisms control the stoichiometry in the case of ZnS:
 Cu,Au,Al and proper adjustment of the
 doping levels in the case of ZnS:Cu,Al
 . Relations for the emission color are given; possible microscopic
 mechanisms are discussed.

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 ST emission color tuning **zinc sulfide phosphor**
 IT **Luminescence**
 (of **zinc sulfide doped with aluminum and copper and gold**)
 IT **Phosphors**
 (zinc sulfide-based, emission color tuning of green emitting)
 IT 1314-98-3, Zinc sulfide, uses
 RL: USES (Uses)
 (phosphors based on, emission color tuning of green emitting)
 IT 7429-90-5, Aluminum, uses 7440-50-8,
Copper, uses 7440-57-5, Gold, uses
 RL: USES (Uses)
 (phosphors from **zinc sulfide doped with**, emission color tuning of **green emitting**)

L87 ANSWER 18 OF 37 HCA COPYRIGHT 2005 ACS on STN
 120:204086 **Green-emitting cathodoluminescent phosphor**
 composition. Shirakawa, Yasuhiro; Takahara, Takeshi; Morikawa, Hiromi (Tokyo Shibaura Electric Co, Japan; Toshiba Electronic Eng). Jpn. Kokai Tokkyo Koho JP 05171142 A2 19930709 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-340912 19911224.

AB The composition comprises a Cu(40-200 ppm)-doped **ZnS phosphor** (95-99.995%) and a surface-bonded pale-blue pigment blend (0.005-5%) containing a Pr2O3 and a TiO2-CoO-Al2O3-Li2O powder. The pigment-coated **phosphor**, emitting a color-rendering **green** light, is suited for use on high-definition **cathode-ray tubes**.

IC ICM C09K011-56
 ICS C09K011-08

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST cathodoluminescent pigment coated **phosphor green** emitting

IT **Phosphors**
 (green-emitting, cathodoluminescent **copper-doped zinc sulfide**, with surface-bonded pigments)

IT 7440-50-8, **Copper**, uses
 RL: USES (Uses)
 (dopants, in **green-emitting cathodoluminescent zinc sulfide phosphors**, with surface-bonded pigments)

IT 1314-98-3, Zinc sulfide (**ZnS**), uses
 RL: USES (Uses)
 (**doped with copper**, **green-emitting cathodoluminescent phosphors** from, with surface-bonded

- pigments)
- IT 12036-32-7, **Praseodymium** oxide (Pr2O3) 153835-37-1,
Aluminum cobalt lithium titanium oxide
RL: PRP (Properties)
(pale-blue pigments from, surface-bonded to cathodoluminescent
copper-doped zinc sulfide
phosphors)
- L87 ANSWER 19 OF 37 HCA COPYRIGHT 2005 ACS on STN
118:157399. **Green**-emitting pigment-coated **phosphor**.
Takahara, Takeshi; Oikawa, Mitsuhiro; Oya, Yasumasa (Toshiba Corp.,
Japan; Toshiba Electronic Engineering Corp.). Jpn. Kokai Tokkyo
Koho JP 04202493 A2 19920723 Heisei, 7 pp. (Japanese). CODEN:
JKXXAF. APPLICATION: JP 1990-335639 19901130.
- AB The **phosphor** comprises a **Cu-doped**
ZnS phosphor 98 .apprx. 99.95% and a cerulean-blue
pigment (essentially cobaltous stannate) 0.05 .apprx. 2% which is
coated on or bonded to the **phosphor** particles, wherein the
Cu content per 1 g of the **phosphor** is 4 +
10-5 .apprx. 2 + 10-4 g. The **phosphor**, emitting a
stable luminous **green**, is suited for use in
color **cathode-ray tubes**.
- IC ICM C09K011-08
ICS C09K011-56; H01J029-20
- CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
- ST **green** emitting blue pigment bonded **phosphor**
- IT **Phosphors**
(**green**-emitting, **copper-doped**
zinc sulfide, coated with blue pigments, for
color **cathode-ray tubes**)
- IT 1314-98-3, **Zinc sulfide** (ZnS),
uses
RL: USES (Uses)
(**copper-doped phosphors** from,
green-emitting, blue-pigment bonded, for color
cathode-ray tubes)
- IT 7440-50-8, **Copper**, uses
RL: USES (Uses)
(**dopants**, in **green**-emitting **zinc**
sulfide phosphors, for color **cathode-**
ray tubes)
- IT 83712-59-8, Cerulean blue
RL: PRP (Properties)
(light blue pigments, coated on **green**-emitting
phosphors, for color **cathode-ray**
tubes)

L87 ANSWER 20 OF 37 HCA COPYRIGHT 2005 ACS on STN
118:69299 Defect chemistry and **luminescence** of
aluminum-, **gold**-, and **copper**-
doped **zinc sulfide**. Bredol, M.;
Merikhi, J.; Ronda, C. (Forschungslab., Philips GmbH, Aachen,

- D-5100, Germany). Berichte der Bunsen-Gesellschaft, 96(11), 1770-4 (English) 1992. CODEN: BBPCAX. ISSN: 0005-9021.
- AB Present high quality CRT TV sets employ wurtzite-(Zn,Cd)S:Cu,Al phosphor or its Cd-free variant sphalerite-ZnS:Cu, Au,Al to generate the green primary color. If prepared properly, both phosphors exhibit the desired emission properties. However, the Au-codoped material tends to large variations of the emission as a function of the preparation procedure and thus is more demanding in terms of precise control of the manufacturing process. This work aims at a better understanding of these peculiarities. Expts. are presented which demonstrate the large influence of the defect chemical of the ZnS-host on the Au-related emission, whereas the Cu-related emission is affected to a lesser extent. Possible techniques for a fine-tuning of the emission spectrum are discussed and evaluated according to the requirements of screen manufacture
- CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
- ST doped zinc sulfide defect chem luminescence; aluminum zinc sulfide defect chem luminescence; gold zinc sulfide defect chem luminescence; copper zinc sulfide defect chem luminescence
- IT Phosphors (aluminum-copper-gold-doped zinc sulfide)
- IT Luminescence (of aluminum-copper-gold-doped zinc sulfide)
- IT 1314-98-3, Zinc sulfide, properties
RL: PRP (Properties)
(defect chemical and luminescence of aluminum-copper-gold-doped)
- IT 7429-90-5, Aluminum, properties 7440-50-8, Copper, properties 7440-57-5, Gold, properties
RL: PRP (Properties)
(defect chemical and luminescence of zinc sulfide cool-doped with)
- L87 ANSWER 21 OF 37 HCA COPYRIGHT 2005 ACS on STN
117:242894 Green light-emitting zinc sulfide phosphor containing pigment. Oya, Yasumasa; Takahara, Takeshi; Oikawa, Mitsuhiro (Toshiba Corp., Japan; Toshiba Electronic Engineering Corp.). Jpn. Kokai Tokkyo Koho JP 04183779 A2 19920630 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-313414 19901119.
- AB The title material comprises Cu-doped ZnS phosphor, on the surface of which ultramarine pigment based on S-containing Al silicate complex is fixed.

Optionally a blue pigment is further fixed on the **phosphor**. The material is useful for color **cathode-ray tube in display, etc.**

IC ICM C09K011-08
ICS C09K011-56; H01J029-20

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73

ST **green light emitting phosphor**
pigment; copper doped zinc sulfide phosphor; sulfur aluminum silicate pigment phosphor; color cathode ray tube phosphor; ultramarine pigment phosphor

IT **Phosphors**
(**copper-doped zinc sulfide**, ultramarine pigment-fixed, for **green light-emitting cathode ray tube**)

IT **Phosphors**
(**green-emitting, ultramarine pigment-fixed copper-doped zinc sulfide, for cathode-ray tubes**)

IT 7704-34-9, Sulfur, uses
RL: USES (Uses)
(**aluminum silicate complex-based pigment containing, for copper-doped zinc sulfide phosphor, for green light-emitting cathode-ray tube**)

IT 1314-98-3, Zinc sulfide, uses
RL: USES (Uses)
(**copper-doped, phosphors, ultramarine pigment-fixed, for green light-emitting cathode-ray tube**)

IT 7440-50-8, Copper, uses
RL: USES (Uses)
(**zinc sulfide phosphor doped with, having ultramarine pigment, for green light-emitting cathode-ray tube**)

L87 ANSWER 22 OF 37 HCA COPYRIGHT 2005 ACS on STN
117:242893 **Green light-emitting zinc sulfide phosphor** containing pigment. Takahara, Takeshi; Oikawa, Mitsuhiro; Oya, Yasumasa (Toshiba Corp., Japan; Toshiba Electronic Engineering Corp.). Jpn. Kokai Tokkyo Koho JP 04183778 A2 19920630 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-313413 19901119.

AB The title material comprises **Cu-doped ZnS phosphor**, on the surface of which pale blue pigment based on TiO₂-CoO-Al₂O₃-Li₂O is fixed. Optionally a blue pigment is further fixed on the **phosphor**. The material is useful for color **cathode-ray tube in display, etc.**

IC ICM C09K011-08
ICS C09K011-56; H01J029-20
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73
ST green light emitting phosphor
pigment; copper doped zinc
sulfide phosphor; titanium oxide blend pigment
phosphor; cobalt oxide blend pigment phosphor;
aluminum oxide blend pigment phosphor; lithium
oxide blend pigment phosphor; color cathode
ray tube phosphor
IT Phosphors
(copper-doped zinc sulfide
, pigment-fixed, for green light-
emitting cathode ray tube)
IT Phosphors
(green-emitting, pigment-fixed copper-
doped zinc sulfide, for
cathode-ray tubes)
IT 1314-98-3, Zinc sulfide, uses
RL: USES (Uses)
(copper-doped, phosphors,
pigment-fixed, for green light-
emitting cathode-ray tube)
IT 1307-96-6, Cobalt oxide (CoO), uses 1344-28-1, Aluminum
oxide, uses 12057-24-8, Lithium oxide, uses 13463-67-7, Titanium
oxide, uses
RL: USES (Uses)
(pigment containing, for copper-doped
zinc sulfide phosphor, for
green light-emitting cathode
-ray tube)
IT 7440-50-8, Copper, uses
RL: USES (Uses)
(zinc sulfide phosphor
doped with, having pigment, for green
light-emitting cathode-ray
tube)

L87 ANSWER 23 OF 37 HCA COPYRIGHT 2005 ACS on STN
117:242892 Green light-emitting
zinc sulfide phosphor containing
pigment. Takahara, Takeshi; Oikawa, Mitsuhiro; Oya, Yasumasa
(Toshiba Corp., Japan; Toshiba Electronic Engineering Corp.). Jpn.
Kokai Tokkyo Koho JP 04183777 A2 19920630 Heisei, 6 pp. (Japanese).
CODEN: JKXXAF. APPLICATION: JP 1990-313412 19901119.
AB The title material comprises Cu-doped
ZnS phosphor, on the surface of which
CoAl₂O₄-based cobalt blue pigment is fixed. Optionally a blue
pigment is further fixed on the phosphor. The material is
useful for color cathode-ray tube in
display, etc.

IC ICM C09K011-08
 ICS C09K011-56; H01J029-20
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 73
 ST green light emitting phosphor
 pigment; copper doped zinc
 sulfide phosphor; cobalt aluminate based pigment
 phosphor; color cathode ray tube
 phosphor
 IT Phosphors
 (copper-doped zinc sulfide
 , cobalt aluminate pigment-fixed, for green
 light-emitting cathode ray
 tube)
 IT Phosphors
 (green-emitting, cobalt aluminate pigment-fixed
 copper-doped zinc sulfide,
 for cathode-ray tubes)
 IT 1314-98-3, Zinc sulfide, uses
 RL: USES (Uses)
 (copper-doped, phosphors, cobalt
 aluminate pigment-fixed, for green light-
 emitting cathode-ray tube)
 IT 1333-88-6, Cobalt aluminate (CoAl₂O₄)
 RL: USES (Uses)
 (pigment containing, for copper-doped
 zinc sulfide phosphor, for
 green light-emitting cathode
 -ray tube)
 IT 7440-50-8, Copper, uses
 RL: USES (Uses)
 (zinc sulfide phosphor
 doped with, having cobalt aluminate pigment, for
 green light-emitting cathode
 -ray tube)

L87 ANSWER 24 OF 37 HCA COPYRIGHT 2005 ACS on STN
 117:36228 Fabrication of color luminescent screen of
 cathode-ray tube. Watanabe, Hirotoshi;
 Nishimura, Yutaka; Matsuo, Koji; Aikawa, Noboru; Tsukamoto,
 Katsuhide (Matsushita Electric Industrial Co., Ltd., Japan). Jpn.
 Kokai Tokkyo Koho JP 03252466 A2 19911111 Heisei, 9 pp. (Japanese).
 CODEN: JKXXAF. APPLICATION: JP 1990-49743 19900301.

AB A shadow-mask color CRT screen is formed by offset
 printings of graphite, red-green-blue
 phosphor and metal-back lines, wherein the graphite ink
 contains a vehicle containing a depolymn.-type organic binder and a
 metalorg. compound; and the phosphor ink contains another
 depolymn.-type organic binder. The compns. and the fabrication
 processes are also claimed. The screen is suited for use in color
 TV's.

IC ICM C09D011-00

CC ICS B41F017-36; C09D011-02; C09D011-10; H01J009-227
73-12 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST color CRT luminescent screen offset printing
IT Cathode-ray tubes
(color luminescent screen for, manufacture of)
IT Optical materials
(graphite and phosphor inks, for offset printings of
color CRT luminescent screen)
IT Inks
(lithog., for color-CRT luminescent screen)
IT 1314-98-3, Zinc sulfide (ZnS),
uses
RL: USES (Uses)
(copper/aluminum-doped,
green-emitting phosphor from, for color-
CRT luminescent screen)
IT 12340-04-4, Yttrium oxide sulfide (Y2O2S)
RL: USES (Uses)
(europium-doped, red-emitting phosphor from,
for color-CRT luminescent screen)
IT 124-07-2D, Octylic acid, silicon derivative 50601-94-0 138322-55-1
RL: USES (Uses)
(graphite ink containing, for offset-printing of color-CRT
luminescent screen)
IT 1314-98-3, Zinc sulfide (ZnS),
uses
RL: USES (Uses)
(silver-doped, blue-emitting phosphor from, for color-
CRT luminescent screen)

L87 ANSWER 25 OF 37 HCA COPYRIGHT 2005 ACS on STN

113:240961 Application studies on red-light
emitting zinc sulfide-cadmium sulfide
and europium-activated yttrium oxide sulfide (Y2O2S:Eu³⁺)
phosphors used in cathode-ray
tube screens for television.

Abdel-Kader, A.: Elkholly, M. M. (Fac. Sci., Menoufia Univ.,
Menoufia, Egypt). Journal of Materials Science: Materials in
Electronics, 1(2), 95-9 (English) 1990. CODEN: JSMEEV. ISSN:
0957-4522.

AB The (Zn0.27Cd0.73)S:Ag,Cl, (Zn0.77Cd0.23)S:Cu,Cl and
Y2O2S:Eu³⁺ red-light emitting
phosphors were used in the preparation of cathode-
ray tube screens for television
. The dependence of screen brightness on both electron-beam
accelerating voltage and current densities was studied. The theor.
calculated intrinsic efficiencies were compared with the exptl.
efficiencies. The chromaticity of the cathode-ray
tube screens was also studied as a function of
accelerating high tension and c.d. Cathodoluminescence emission
spectra for these phosphors at room temperature are also
measured.

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST cathode tube screen red
emitting phosphor; cadmium zinc sulfide
phosphor television; yttrium oxysulfide europium
phosphor television

IT Phosphors
(cadmium zinc sulfide and yttrium oxysulfide)

IT Luminescence, cathodo-
(of europium-doped yttrium oxysulfide and copper- and silver-doped cadmium zinc sulfide)

IT Phosphors
(cathodoluminescent, from cadmium zinc sulfide and yttrium oxysulfide)

IT 126668-33-5, Cadmium zinc sulfide
(Cd0.23Zn0.77S) 126668-34-6, Cadmium zinc sulfide (Cd0.73Zn0.27S)
RL: PRP (Properties)
(cathodoluminescent phosphors containing, for cathode ray tubes)

IT 7440-22-4, Silver, uses and miscellaneous 7440-50-8,
Copper, uses and miscellaneous 7782-50-5, Chlorine, uses and miscellaneous
RL: USES (Uses)
(cathodoluminescent phosphors from cadmium zinc sulfide doped with, for cathode ray tubes)

IT 12340-04-4, Yttriumoxy sulfide (Y2O2S)
RL: PRP (Properties)
(cathodoluminescent phosphors from europium-containing, for cathode ray tube screens)

IT 22541-18-0, Europium(3+), uses and miscellaneous
RL: USES (Uses)
(cathodoluminescent phosphors from yttrium oxysulfide containing, for cathode-ray tube screens)

L87 ANSWER 26 OF 37 HCA COPYRIGHT 2005 ACS on STN
113:181593 Electroluminescent light panel for liquid-crystal display.
Mori, Naoyuki (NEC Kansai, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 02142090 A2 19900531 Heisei, 5 pp. (Japanese). CODEN: JKXXAF.

APPLICATION: JP 1988-295268 19881122.
AB An electroluminescent light panel for a white-mode liquid-crystal display comprises a luminescent layer containing a dispersion of a ZnS:Cu phosphor powder and a red fluorescent pigment, wherein the phosphor contains 0.05-0.15 weight% Cu and the pigment is present in an amount of 7-10 weight%.

IC ICM H05B033-14
ICS C09K011-56

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73, 75

- IT 1314-98-3, Zinc sulfide, uses and miscellaneous
 RL: USES (Uses)
 (phosphor, doped with copper, for electroluminescent light panels for liquid-crystal display devices)
- IT 7440-50-8, Copper, uses and miscellaneous
 RL: USES (Uses)
 (zinc sulfide phosphor doped with, for electroluminescent light panels for liquid-crystal display devices)

L87 ANSWER 27 OF 37 HCA COPYRIGHT 2005 ACS on STN
 112:148706 Electroluminescent display panel. Matsuoka, Isahiro; Toyama, Hitoshi; Suzuki, Isamu (Nichia Kagaku Kogyo K. K., Japan). Jpn. Kokai Tokkyo Koho JP 01243392 A2 19890928 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-71202 19880324.

AB A yellow-green or yellow electroluminescent display device, suited for use as a back-lighting for a liquid-crystal display, comprises a luminescent layer consisting of Eu-activated ZnS phosphor particles and dye particles dispersed in a binder.

IC ICM H05B033-14

ICS C09K011-00; H05B033-18

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

ST electroluminescent panel zinc sulfide phosphor

IT Electroluminescent devices

(copper-doped zinc sulfide and dyes for)

IT 7440-50-8, Copper, uses and miscellaneous

RL: USES (Uses)

(phosphors activated by, for electroluminescent panels)

IT 1314-98-3, Zinc sulfide, uses and miscellaneous

RL: USES (Uses)

(phosphors, activated by copper for electroluminescent panels)

L87 ANSWER 28 OF 37 HCA COPYRIGHT 2005 ACS on STN

107:145008 Luminescent screen for cathode-ray tubes. Watanabe, Hisamitsu (Hitachi, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 62072780 A2 19870403 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-212437 19850927.

AB The light-blue-emitting screen employs a mixture of ZnS activated with Ag and ZnS activated with Au and Al. The product is useful for color displays. Phosphors containing Ag-doped ZnS (blue) 73, Au and Al-doped ZnS (yellow) 21, and Eu-doped Y2O2S (red) 6% were prepared

IC ICM C09K011-08
 ICS H01J029-20
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 73
 ST color display screen **zinc sulfide; gold**
aluminum zinc sulfide phosphor
 IT **Luminescent screens**
 (cathodo-, **phosphor** mixts. for)
 IT 7440-53-1, Europium, uses and miscellaneous
 RL: USES (Uses)
 (phosphors based on yttrium oxysulfide activated with,
 for luminescent screens)
 IT 7440-57-5, Gold, uses and miscellaneous
 RL: USES (Uses)
 (phosphors based on **zinc sulfide**
 activated with **aluminum** and, for **luminescent**
 screens)
 IT 7429-90-5, Aluminum, uses and miscellaneous
 RL: USES (Uses)
 (phosphors based on **zinc sulfide**
 activated with **gold** and, for **luminescent**
 screens)
 IT 7440-22-4, Silver, uses and miscellaneous
 RL: USES (Uses)
 (phosphors based on **zinc sulfide**
 activated with, for **luminescent** screens)
 IT 12340-04-4, Yttrium oxide sulfide (Y₂O₂S)
 RL: USES (Uses)
 (phosphors based on, activated with europium, for
 luminescent screens)
 IT 1314-98-3, Zinc sulfide, uses and
 miscellaneous
 RL: USES (Uses)
 (phosphors based on, for **luminescent** screens)

L87 ANSWER 29 OF 37 HCA COPYRIGHT 2005 ACS on STN
 104:159763 **Phosphors for color cathode-ray**
tubes. Koike, Norio; Ito, Takeo; Kawamata, Takamitsu;
 Sugano, Satoshi (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP
 60221482 A2 19851106 Showa, 4 pp. (Japanese). CODEN: JKXXAF.
 APPLICATION: JP 1984-77590 19840419.

AB The cathodoluminescent **screen** for a **cathode-**
ray tube contains a **green-emitting**
phosphor doped with a strong magnetic metal 0.1-500 ppm and
 a **red-emitting phosphor** doped with a rare earth
 metal 15-60 ppm. The above screen may contain Ag- and Cl-
 doped ZnS blue-emitting **phosphor**,
Cu- and **Al-doped ZnS**
green-emitting phosphor doped with Ni 3
 ppm, and Eu-doped Y₂O₂S **red-emitting phosphor**
 doped with Tb 30 ppm.

IC ICM C09K011-08

CC ICS H01J029-20
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and
 Other Reprographic Processes)
 ST phosphor cathode ray tube
 IT Phosphors
 (red-emitting, dopants for)
 IT 1314-98-3, uses and miscellaneous
 RL: USES (Uses)
 (cathode-ray tubes with
 phosphors containing)
 IT 7440-02-0, uses and miscellaneous
 RL: USES (Uses)
 (copper- and aluminum-doped
 zinc sulfide green-emitting
 phosphor doped with)
 IT 7440-48-4, uses and miscellaneous
 RL: USES (Uses)
 (copper- and gold- and aluminum-
 doped zinc sulfide green
 -emitting phosphor doped with)
 IT 7429-90-5, uses and miscellaneous 7440-57-5, uses
 and miscellaneous
 RL: USES (Uses)
 (green-emitting phosphor containing zinc
 sulfide doped with)
 IT 7440-50-8, uses and miscellaneous
 RL: USES (Uses)
 (green-emitting phosphor containing zinc
 -sulfide doped with)
 IT 1314-36-9, uses and miscellaneous 12340-04-4
 RL: USES (Uses)
 (red-emitting phosphors containing)
 IT 7440-52-0, uses and miscellaneous
 RL: USES (Uses)
 (red-emitting phosphors containing yttrium oxide
 doped with)
 IT 7440-27-9, uses and miscellaneous 7440-53-1, uses and
 miscellaneous
 RL: USES (Uses)
 (red-emitting phosphors containing yttrium oxide
 sulfide doped with)

L87 ANSWER 30 OF 37 HCA COPYRIGHT 2005 ACS on STN

104:139432 Cathode-ray tube screen

Ito, Takeo; Koike, Norio; Tamaya, Masaaki; Kawamata, Takamitsu
 (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 60156787 A2
 19850816 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP
 1984-11876 19840127.

AB Portions of a cathode-ray tube
 screen are coated with a phosphor containing 0.5-5 ppm
 Ni, which emits green light and is
 selected from Cu-, Au-, and Cu-
 Au-activated ZnS and Cu-activated (Cd,

$Zn)S$, to reduce fluorescence induced by low-energy scattered electrons. Contrasts, i.e., ratios of luminescence of a white bar to the brightness of the dark background in a color picture tube screen, were 10-30% higher than those without Ni doping, and visual reflectivity under a fluorescent lamp was decreased from that without Ni doping.

- IC ICM C09K011-56
 ICS H01J029-20
- CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 73, 76
- ST luminescent screen zinc sulfide phosphor; cathode ray tube screen; nickel doped zinc sulfide phosphor; copper activated zinc sulfide phosphor; gold activated zinc sulfide phosphor; cadmium zinc sulfide phosphor
- IT Luminescent screens
 (zinc sulfide phosphors for, doped with nickel)
- IT Phosphors
 (zinc sulfide, doped with nickel)
- IT 1306-23-6D, solid solns. with zinc sulfide
 1314-98-3, uses and miscellaneous 1314-98-3D,
 solid solns. with cadmium sulfide
 RL: USES (Uses)
 (phosphors, nickel-doped, for cathode-ray tube screens)
- IT 7440-50-8, uses and miscellaneous 7440-57-5, uses
 and miscellaneous
 RL: USES (Uses)
 (zinc sulfide phosphors
 doped with nickel and activated with, for cathode-ray tube screens)
- IT 7440-02-0, uses and miscellaneous
 RL: USES (Uses)
 (zinc sulfide phosphors doped with,
 for cathode-ray tube screens)

L87 ANSWER 31 OF 37 HCA COPYRIGHT 2005 ACS on STN
 104:99169 Monochrome cathode-ray tubes.
 Morita, Yasukazu (Hitachi, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP
 60177091 A2 19850911 Showa, 4 pp. (Japanese). CODEN: JKXXAF.
 APPLICATION: JP 1984-32301 19840224.

AB Title tubes possess a luminescent layer prepared by coating a mixture of a ZnS-type phosphor and an orange-luminescent phosphor, such as CaS:Mn or CaMgS:Mn, and show a yellow-green to greenish yellow or white luminescence. The tubes show high luminosity and short afterglow; hence they are useful for displays. Thus, the

inner wall of a bulb was precipitation-coated with a layer of a CaMgS: Mn/ZnS:AuAl (30:70) mixed phosphor to obtain a monochrome cathode-ray tube, which showed a 10-20% higher luminosity than a tube prepared with a conventional Y2O2S:Eu/ZnS:AuAl phosphor.

IC ICM C09K011-08
 ICS H01J029-20; H01J031-10

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 74, 76

ST monochrome cathode ray tube
 phosphor; calcium sulfide manganese phosphor display; magnesium calcium sulfide phosphor display; luminescence yellow green phosphor display; white luminescence cathode ray tube; zinc sulfide gold aluminum phosphor

IT Phosphors
 (sulfide-type, for monochrome cathode-ray tubes,)

IT 7439-96-5, uses and miscellaneous
 RL: USES (Uses)
 (calcium magnesium sulfide phosphor doped with, in mixture for greenish yellow or white luminescence in cathode-ray tube)

IT 7440-57-5, uses and miscellaneous
 RL: USES (Uses)
 (phosphor mixture from zinc sulfide doped with, for greenish yellow or white luminescence in cathode-ray tube)

IT 7429-90-5, uses and miscellaneous
 RL: USES (Uses)
 (phosphor mixture from zinc sulfide doped with, for greenish yellow or white luminescence in cathode-ray tubes)

IT 1314-98-3, uses and miscellaneous
 RL: USES (Uses)
 (phosphor mixture from, for greenish yellow or white luminescence in cathode-ray tubes)

IT 7440-22-4, uses and miscellaneous 7440-50-8, uses and miscellaneous
 RL: USES (Uses)
 (zinc sulfide phosphor doped with, in mixture for greenish yellow or white luminescence in cathode-ray tube)

IT 12032-36-9D, solid solns. with calcium sulfide
 20548-54-3D, solid solns. with magnesium sulfide
 RL: PRP (Properties)

(zinc sulfide-type phosphor mixed with manganese-doped, for greenish yellow or white luminescence in cathode-ray tubes)

L87 ANSWER 32 OF 37 HCA COPYRIGHT 2005 ACS on STN

104:59235 Phosphors for high-contrast cathode

ray tubes. Ito, Takeo; Koike, Norio; Kawamata, Takamitsu; Tamaya, Masaaki (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 60199092 A2 19851008 Showa, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1984-53519 19840322.

AB A ZnS-based phosphor powder is doped with a activator by primary calcination, then doped with Co or Fe 0.5-200 ppm and Ni 0.5-5 ppm by secondary calcination at a lower temperature to obtain a green-luminescent phosphor, and the phosphor thus prepared is coated on the inner wall of a bulb to give cathode ray tubes.

The tubes show improved contrast, and are hence useful for color and monochrome displays. Thus, ZnS powder was doped with Cu 250 ppm by primary calcination for 2 h at 950° under N₂, then doped with Co 10 ppm and Ni 2 ppm by secondary calcination for 2 h at 800° under N₂ to obtain a green-luminescent phosphor ZnS

:Cu, and the phosphor was then suspended in an aqueous solution containing (NH₄)₂Cr₂O₇ and poly(vinyl alc.). After coating the suspension on the inner wall of a bulb, the coated layer was patternwise exposed to UV light and developed with H₂O to give a stripe-shaped green-luminescent phosphor layer, which showed a relative contrast 147 vs. 100 for a control phosphor layer composed of undoped ZnS:Cu phosphor alone.

IC ICM C09K011-56

ICS H01J029-20

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 76

ST cathode ray tube high contrast; zinc sulfide green luminescence phosphor; gold activation zinc sulfide phosphor; copper activation zinc sulfide phosphor; cobalt doping zinc sulfide phosphor; nickel doping zinc sulfide phosphor; iron doping zinc sulfide phosphor

IT Phosphors (green-emitting, dopant for zinc sulfide-based, for high-contrast cathode ray tubes)

IT 7440-57-5, uses and miscellaneous

RL: USES (Uses)

(phosphors based on zinc sulfide activated by copper and, with nickel and cobalt or iron dopants for high-contrast cathode ray

- tubes)
- IT 7440-50-8, uses and miscellaneous
 RL: USES (Uses)
 (phosphors based on zinc sulfide
 activated by, with nickel and cobalt or iron dopants for
 high-contrast cathode ray tubes)
- IT 1314-98-3, uses and miscellaneous
 RL: USES (Uses)
 (phosphors based on, for high-contrast cathode
 ray tubes)
- IT 7439-89-6, uses and miscellaneous 7440-48-4, uses and
 miscellaneous
 RL: USES (Uses)
 (phosphors from zinc sulfide doped
 with nickel and, for high-contrast cathode ray
 tubes)
- IT 7440-02-0, uses and miscellaneous
 RL: USES (Uses)
 (phosphors from zinc sulfide doped
 with, for high-contrast cathode ray
 tubes)

L87 ANSWER 33 OF 37 HCA COPYRIGHT 2005 ACS on STN

104:59234 Phosphors for high-contrast cathode
 ray tubes. Ito, Takeo; Koike, Norio; Kawamata,
 Takamitsu; Tamaya, Masaaki (Toshiba Corp., Japan). Jpn. Kokai
 Tokkyo Koho JP 60199091 A2 19851008 Showa, 5 pp. (Japanese).
 CODEN: JKXXAF. APPLICATION: JP 1984-53518 19840322.

AB A ZnS-based phosphor powder is doped with an activator by primary calcination, then doped with Co 0.5-200 ppm by secondary calcination at a lower temperature to obtain a green-luminescent phosphor, and the phosphor thus prepared is coated on the inner wall of a bulb to give cathode ray tubes. The tubes show improved contrast, and are hence useful for color and monochrome displays. Thus, powdery ZnS was doped with Cu 250 ppm by primary calcination for 2 h at 950° under N₂, then doped with Co 10 ppm by secondary calcination for 2 h at 800° under N₂ to obtain a green-luminescent phosphor ZnS:Cu, and the phosphor was then suspended in an aqueous solution containing (NH₄)₂Cr₂O₇ and poly(vinyl alc.). After coating the suspension on the inner wall of a bulb, the coated layer was patternwise exposed to UV light and developed with H₂O to give a stripe-shaped green-luminescent phosphor layer, which showed a relative contrast 120 vs. 100 for a control phosphor layer not doped with Co.

IC ICM C09K011-56
 ICS H01J029-20

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 76

ST cathode ray tube high contrast;

- zinc sulfide green luminescence**
phosphor; cobalt copper zinc
sulfide phosphor
IT Phosphors
 (green-emitting, **zinc sulfide**-based
 cobalt-doped, for high-contrast **cathode ray**
tubes)
IT 1314-98-3, uses and miscellaneous 1314-98-3D,
 solid solns. with cadmium sulfide
 RL: USES (Uses)
 (phosphors based on, for high-contrast **cathode**
ray tubes)
IT 7440-57-5, uses and miscellaneous
 RL: USES (Uses)
 (phosphors from **zinc sulfide**
 activated by **copper** and, with cobalt dopant for
 high-contrast **cathode ray tubes**)
IT 7440-50-8, uses and miscellaneous
 RL: USES (Uses)
 (phosphors from **zinc sulfide**
 activated by, with cobalt dopant for high-contrast
cathode ray tubes)
IT 7440-48-4, uses and miscellaneous
 RL: USES (Uses)
 (phosphors from **zinc sulfide** doped
 with, for high-contrast **cathode ray**
tubes)
IT 1306-23-6D, solid solns. with **zinc sulfide**
 RL: PRP (Properties)
 (phosphors, for high-contrast **cathode-**
ray tubes)
L87 ANSWER 34 OF 37 HCA COPYRIGHT 2005 ACS on STN
102:36429 Color cathode-ray tube. (Kasei
 Optonix, Ltd., Japan; Sony Corp.). Jpn. Kokai Tokkyo Koho JP
 59136379 A2 19840804 Showa, 10 pp. (Japanese). CODEN: JKXXAF.
 APPLICATION: JP 1983-10114 19830125.
AB A color cathode-ray tube contains a
 rare-earth red phosphor (e.g., (Y, Eu)202S), a
 green phosphor (e.g., ZnS:Cu,
 Al), and a blue phosphor (e.g., ZnS:Ag)
 which when irradiated with an electron beam forms a color image.
 The red phosphor contains an addnl.
 phosphor (M_{1-x-y}EuxCey)202S, where M = Y, Gd, La, and/or
 Lu, to increase the uniformity of the image. The exact composition and
 mixture ratio are given in detail.
IC C09K011-477; H01J029-20
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related
 Properties)
ST rare earth oxide sulfide phosphor; cathode
 ray tube phosphor color
IT Phosphors
 (for color cathode-ray tubes)

IT 1314-98-3, uses and miscellaneous
 RL: USES (Uses)
 (phosphor from metal-doped, for cathode-ray tube)

IT 12031-43-5 12163-19-8 12339-07-0 12340-04-4
 RL: PRP (Properties)
 (phosphor from metal-doped, for color cathode-ray tube)

IT 7440-45-1, uses and miscellaneous 7440-53-1, uses and
 miscellaneous
 RL: USES (Uses)
 (yttrium oxide sulfide doped with, phosphor, for color cathode-ray tube)

IT 7429-90-5, uses and miscellaneous 7440-22-4, uses and
 miscellaneous 7440-50-8, uses and miscellaneous
 RL: USES (Uses)
 (zinc sulfide doped with, phosphor, for color cathode-ray tube)

L87 ANSWER 35 OF 37 HCA COPYRIGHT 2005 ACS on STN
 101:201706 Slow electron-excitation type blue-emitting phosphors
 and fluorescent display devices.
 (Futaba Denshi Kogyo Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP
 58204087 A2 19831128 Showa, 5 pp. (Japanese). CODEN: JKXXAF.

APPLICATION: JP 1982-87679 19820524.

AB Blue-emitting slow electron-excitabile phosphors are composed of 20-99% blue-emitting phosphors and 1-80% bluish green-emitting phosphors. The blue emitting phosphors are preferably selected from ZnS:Ag, ZnS:Ag,Al, ZnS:
 Zn, (Zn_{1-x}Cdx)S:Ag and (Zn_{1-x}Cdx)S:Ag,Al
 (3 < x < 0.2), whereas ZnO:Zn is useful as the bluish green-emitting phosphor. A fluorescent display device prepared by using the phosphors is also claimed. The phosphor mixts. exhibit good emission efficiency.

IC C09K011-18; C09K011-10; C09K011-30

ICA C09K011-14; H01J029-30; H01J031-15

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73, 76

ST phosphor blue emitting display device;
 electron excitation phosphor display device; fluorescent display device; zinc sulfide phosphor;
 oxide zinc phosphor

IT Luminescent screens
 (for fluorescent optical imaging devices, blue-emitting electron-excitation type phosphor mixts. for)

IT 1306-23-6D, solid solns. with zinc sulfide
 RL: USES (Uses)
 (phosphors, doped with silver and

aluminum, for fluorescent display devices)

IT 1314-98-3, uses and miscellaneous
 RL: USES (Uses)
 (silver and aluminum doped, phosphors containing, for fluorescent display devices)

IT 7440-66-6, uses and miscellaneous
 RL: USES (Uses)
 (zinc oxide phosphor doped with, for fluorescent display devices)

IT 7429-90-5, uses and miscellaneous 7440-22-4, uses and miscellaneous
 RL: USES (Uses)
 (zinc sulfide type phosphors doped with, for fluorescent display devices)

IT 1314-13-2, uses and miscellaneous
 RL: USES (Uses)
 (zinc-doped, phosphor composition containing, for fluorescent display devices)

L87 ANSWER 36 OF 37 HCA COPYRIGHT 2005 ACS on STN

97:227602 Cathode ray tubes for color televisions. (Kasei Optonix, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 57040836 A2 19820306 Showa, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1981-71858 19810513.

AB Cathode ray tubes for color television sets contain (1) blue-emitting phosphors of the formula $\text{SrS.xGa}_2\text{S}_3:y\text{Ce}^{3+}$ ($0.8 \leq x \leq 1.4$; $4 + 10^{-4} \leq y \leq 1 + 10^{-1}$), (2) green-emitting phosphors of the formula ZnS:Cu,Al ($10^{-5}-10^{-3}$ g Cu/g ZnS , $10^{-5}-10^{-3}$ g Al/g ZnS) and $(\text{Zn}_{1-z}\text{Cd}_z)\text{S}$: CuAl [$z \leq 0.11$; Cu, Al 5 + $10^{-6}-10^{-3}$ g/g $(\text{Zn,Cd})\text{S}$], and (3) red-emitting phosphors selected from $\text{Y}_2\text{O}_2\text{S:Eu}$, $\text{Y}_2\text{O}_3:\text{Eu}$, and $\text{YVO}_4:\text{Eu}$ ($10^{-2}-1.5 + 10^{-1}$ g Eu/g phosphor). The $\text{SrS.xGa}_2\text{S}_3:y\text{Ce}$ phosphors show very little emission intensity saturation phenomena.

IC H01J029-20; C09K011-46
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST Section cross-reference(s): 73, 76

ST color television cathode ray tube; phosphor cathode ray tube; blue emitting phosphor; gallium strontium sulfide phosphor

IT Cathode-ray tubes
 (television, color, blue-emitting cerium-doped strontium-gallium sulfide for)

IT 1314-96-1D, solid solns. with gallium sulfide 53238-24-7D, solid solns. with strontium sulfide
 RL: USES (Uses)

(cerium-doped, blue-emitting phosphors, for color television cathode ray tubes
)
IT 1306-23-6D, solid solns. with zinc sulfide
RL: USES (Uses)
(copper and aluminum doped,
green-emitting phosphors for color television cathode ray tubes
)
IT 1314-98-3, properties
RL: PRP (Properties)
(copper and aluminum doped, green
-emitting phosphors for color television cathode ray tubes)
IT 12340-04-4 13566-12-6
RL: USES (Uses)
(europium-doped, red-emitting phosphors for color television cathode ray tubes)
IT 1314-36-9, properties
RL: PRP (Properties)
(europium-doped, red-emitting phosphors for color television cathode ray tubes)
IT 7440-45-1, uses and miscellaneous
RL: USES (Uses)
(gallium strontium sulfide phosphors doped with, blue-emitting, for color television cathode ray tubes)

L87 ANSWER 37 OF 37 HCA COPYRIGHT 2005 ACS on STN
95:178716 Adherence of a phosphor-photobinder layer to a glass support. Harper, Stanley A. (RCA Corp., USA). U.S. US 4284694 19810818, 4 pp. (English). CODEN: USXXAM. APPLICATION: US 1980-143765 19800425.
AB A luminescent screen for a cathode-ray tube is prepared by coating a clean glass surface with an aqueous solution containing poly(vinyl alc.) and a H₂O-soluble zirconyl compound to form a precoating, overcoating with a phosphor-photopolymerizable binder layer, exposing, and developing by the slurry direct-photog. process. By employing the precoating to the glass surface, the subsequently deposited phosphor coating exhibits improved adherence to the surface. Thus, a solution comprised of poly(vinyl alc.) (87% hydrolyzed) 0.1, zirconyl nitrate 0.02, and H₂O 99.88% was coated on the inner surface of a glass 25-V faceplate panel of a color TV picture tube, dried in air by IR heat, overcoated with a photosensitive composition comprised of 10% poly(vinyl alc.) 233, a 45% aqueous solution of an acrylic polymer 13, 10% Na₂Cr₂O₇ 14, green-emitting Cu-activated Zn-Cd sulfide particles 292 and H₂O 402 g at 4.0 mg/cm² of the phosphor particles, dried, exposed through an apertured mask to a UV source, and developed by spraying and

flushing with H₂O to give a **luminescent** screen of excellent **phosphor** layer adherence.

IC G03C005-00
NCL 430023000
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic Processes)
ST Section cross-reference(s): 76
luminescent screen cathode ray tube; zirconyl compd precoating luminescent screen
IT Luminescent screens
(for **cathode-ray tubes**, precoating containing poly(vinyl alc.) and zirconyl compound for, for increased adhesion of photohardened **phosphor** coating to glass supports)
IT Acrylic polymers, uses and miscellaneous
RL: USES (Uses)
(photopolymerizable composition containing **phosphors**, sodium dichromate and, for luminescent screens for **cathode-ray tubes**)
IT 13826-66-9
RL: USES (Uses)
(adhesion-improving layers containing poly(vinyl alc.) and, for luminescent screens for **cathode-ray tubes**)
IT 9002-89-5
RL: USES (Uses)
(adhesion-improving layers containing zirconyl nitrate and, for luminescent screens for **cathode-ray tubes**)
IT 1314-98-3, uses and miscellaneous
RL: USES (Uses)
(**phosphors** from copper-doped mixture of cadmium sulfide and, for luminescent screens for **cathode-ray tube**)
IT 1306-23-6, uses and miscellaneous
RL: USES (Uses)
(**phosphors** from copper-doped mixture of zinc sulfide and, for luminescent screens for **cathode-ray tubes**)
IT 7440-50-8, uses and miscellaneous
RL: USES (Uses)
(**phosphors** from zinc sulfide -cadmium sulfide mixts. doped with, for luminescent screens for **cathode-ray tubes**)
IT 10588-01-9
RL: USES (Uses)
(photopolymerizable binder coating compns. containing acrylic polymers and, for **cathode-ray tube luminescent screens**)

Thompson 10/724,062

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